ShawandPartners
Financial Services

Boab Metals Ltd (BML)

Rating: Buy | Risk: High | Price Target: $0.40

10 December 2024

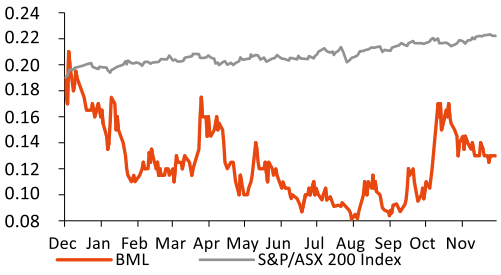
Binding Offtake for Sorby Hills to Underpin Financing

Key Information	
Current Price ($ps)	0.13
12m Target Price ($ps)	0.40
52 Week Range ($ps)	0.08 - 0.21
Target Price Upside (%)	206.1%
TSR (%)	206.1%
Reporting Currency	AUD
Market Cap ($m)	30
Sector	Materials
Avg Daily Volume (m)	0.2
ASX 200 Weight (%)	0%

Fundamentals				
YE 30 Jun (AUD)	FY24A	FY25E	FY26E	FY27E
Sales ($m)	0	0	0	368
NPAT ($m)	(3)	(2)	(4)	116
EPS (cps)	(1.6)	(0.4)	(0.4)	12.9
EPS Growth (%)	54.9%	77.9%	(14.1%)	nm
DPS (cps) (AUD)	0.0	0.0	0.0	0.0
Franking (%)	0%	0%	0%	0%

Ratios				
YE 30 Jun	FY24A	FY25E	FY26E	FY27E
P/E (x)	(5.3)	(36.1)	(31.7)	1.0
EV/EBITDA (x)	(7.3)	(6.8)	(6.8)	0.1
Div Yield (%)	0.0%	0.0%	0.0%	0.0%
Payout Ratio (%)	0.0%	0.0%	0.0%	0.0%

Price Performance				
YE 30 Jun	1 Mth	2 Mth	3 Mth	1 Yr
Relative (%)	(8.6%)	31.1%	44.0%	(42.7%)
Absolute (%)	(7.1%)	34.0%	49.4%	(25.7%)
Benchmark (%)	1.5%	2.9%	5.4%	17.0%



Price performance indexed to 100 *Source: FactSet*

Major Shareholders	
Villiers Queensland	10.6%
Zero Nominees	8.4%
Board and Management	4.0%
Citicorp Nominees	3.5%
Brent Connolly	2.9%

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Event

Boab Metals has announced it has secured a binding offtake agreement with Trafigura for the lead-silver concentrate that will be produced from the Sorby Hills Lead-Silver-Zinc Project. The offtake also comes with a US$30m prepayment to cornerstone the financing plan which may include debt from the Northern Australia Infrastructure Fund (NAIF). We expect the company to reach a Final Investment Decision in mid-2025. We view this as a highly positive announcement for Boab Metals which will underpin the financing process.

Highlights

- The Sorby Hills Project is located in the Kimberley Region of Western Australia. Boab released a DFS in January 2023 and updated the financials with the completion of a FEED study in June 2024. The key project metrics include upfront capital expenditure of A$264M, average C1 cost of US$ 0.36/lb payable Lead (including silver credits), pre-tax NPV_8 of A$411M, pre-tax IRR of 37%, and average annual EBITDA of A$126m. Our post tax NPV_{10} of the project is A$250m.
- The offtake agreement is for 75% of the lead-silver concentrate and will be sold at LME cash settlement price over the quotational period with typical payables for lead and silver. Sorby Hills will produce a very clean lead-silver concentrate that is likely to see strong demand from lead concentrators.
- The offtake also comes with a US$30m prepayment facility at an interest rate of SOFR +5% which is highly competitive funding. This will now cornerstone the financing process for the project. We believe Boab has a great opportunity to source a significant proportion of its debt funding from the Northern Australian Infrastructure Facility (NAIF).
- Boab recently executed an agreement to purchase its JV partner's 25% stake in the project. In our view this significantly simplifies the financing process for the project by removing direct Chinese ownership of the asset. This will make it easier for Australian government entities such as NAIF to provide funding. Importantly, there is no upfront payment to be made to Yuguang. There will be a A$12.5m payment made at the time of a Final Investment Decision (FID) with further payments of A$5.5m and A$5m no later than 12mths and 18mths from first shipment of concentrate.
- Boab has commenced detailed due diligence on the potential acquisition of the DeGrussa process plant from Sandfire. Preliminary due diligence has indicated the DeGrussa process plant, which comprises a conventional crushing, milling, flotation, dewatering and filtration circuit is ideally suited for the requirements of Sorby Hills. This could materially reduce the pre-production capex of A$264m.
- Demand for silver in the production of solar panels has driven the silver market into a supply deficit. Total annual silver demand has grown from a relatively steady 1,000Mozpa over the past decade to over 1,200Moz with further growth expected. Demand for solar panels has increased from around 5% of total demand in 2015 to around 14% in 2023. Silver is the most conductive metal and has excellent reflective properties which make it ideal for solar panels.
- Sorby Hills other main commodity is lead, which is perhaps the most mis-understood of the base metals. It is a common misperception that demand for lead is falling as lead-acid batteries are replaced by lithium-ion batteries. Lead consumption has actually increased by an average 3.2% per annum from 2004-2023 and we conservatively forecast further annual growth of 2.2% to 2030. Global lead usage is expected to increase from 11.7Mt in 2020 to 14.6Mt in 2030.

Recommendation

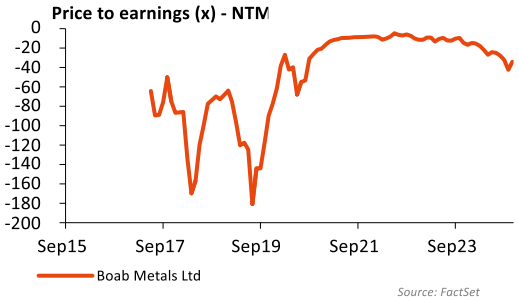
We retain our BUY recommendation and 40c price target. We make no changes to forecasts in this report.

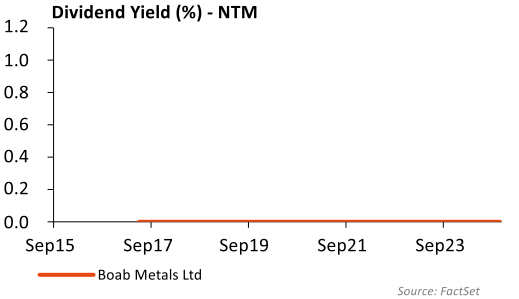
Boab Metals Ltd
Materials
Materials
FactSet: BML-AU / Bloomberg: BML AU

Key Items	Data
Recommendation	BUY
Risk	HIGH
Price ($ps)	0.13
Target Price ($ps)	0.40
52 Week Range ($ps)	0.08 - 0.21
Shares on Issue (m)	233
Market Cap ($m)	30
Enterprise Value ($m)	24
TSR (%)	206.1%
Valuation per share (cps) (AUD)	0.40
Valuation ($m)	358.19

Company Description

Boab Metals is a base metal exploration and development company, primarily focused on its flagship Sorby Hills Project in Kununurra, Western Australia. The flagship Project is the largest undeveloped, near surface lead-silver-zinc deposit in Australia. Sorby Hills is 75%-owned by Boab Metals and 25% owned by Henan-Yuguang - China's largest lead smelting / silver producer.





Financial Year End: 30 June

Investment Summary (AUD)	FY23A	FY24A	FY25E	FY26E	FY27E
EPS (Reported) (cps)	**(3.6)**	**(1.6)**	**(0.4)**	**(0.4)**	**12.9**
EPS (Underlying) (cps)	**(3.6)**	**(1.6)**	**(0.4)**	**(0.4)**	**12.9**
EPS (Underlying) Growth (%)	18.9%	54.9%	77.9%	(14.1%)	nm
PE (Underlying) (x)	**(4.3)**	**(5.3)**	**(36.1)**	**(31.7)**	**1.0**
EV / EBIT (x)	**(4.1)**	**(7.3)**	**(6.8)**	**(6.8)**	**0.1**
EV / EBITDA (x)	**(4.1)**	**(7.3)**	**(6.8)**	**(6.8)**	**0.1**
DPS (cps) (AUD)	0.0	0.0	0.0	0.0	0.0
Dividend Yield (%)	0.0%	0.0%	0.0%	0.0%	0.0%
Franking (%)	0%	0%	0%	0%	0%
Payout Ratio (%)	0.0%	0.0%	0.0%	0.0%	0.0%
Free Cash Flow Yield (%)	(27.6%)	(20.7%)	(112.7%)	(129.5%)	93.7%

Profit and Loss (AUD) (m)	FY23A	FY24A	FY25E	FY26E	FY27E
Sales	0	0	0	0	368
Other Operating Income	0	0	0	0	0
EBITDA	**(6)**	**(3)**	**(4)**	**(4)**	**190**
EBITDA Margin (%)	*nm*	*nm*	*nm*	*nm*	*51.7%*
Depreciation & Amortisation	(0)	0	0	0	(20)
EBIT	**(5.9)**	**(3.3)**	**(3.5)**	**(3.5)**	**170.0**
EBIT Margin (%)	*nm*	*nm*	*nm*	*nm*	*46.2%*
Net Interest	0	0	1	(2)	(5)
Pretax Profit	(6)	(3)	(3)	(5)	165
Minorities	0	0	0	0	0
NPAT Underlying	**(6)**	**(3)**	**(2)**	**(4)**	**116**
Significant Items	0	0	0	0	0
NPAT Reported	**(6)**	**(3)**	**(2)**	**(4)**	**116**

Cashflow (AUD) (m)	FY23A	FY24A	FY25E	FY26E	FY27E
EBIT	(6)	(3)	(4)	(4)	170
Tax Paid	0	0	0	1	2
Net Interest	0	0	1	(2)	(5)
Change in Working Capital	0	0	0	0	(46)
Depreciation & Amortisation	(0)	0	0	0	(20)
Other	0	(0)	(0)	3	6
Operating Cashflow	**(5)**	**(4)**	**(3)**	**(1)**	**147**
Capex	(2)	0	(80)	(150)	(37)
Acquisitions and Investments	0	0	(2)	(2)	(2)
Disposal of Fixed Assets/Investments	0	0	0	0	0
Other	0	0	(12)	0	(10)
Investing Cashflow	**(2)**	**0**	**(94)**	**(152)**	**(49)**
Free Cashflow	**(7)**	**(4)**	**(83)**	**(151)**	**110**
Equity Raised / Bought Back	5	5	100	0	0
Dividends Paid	0	0	0	0	0
Change in Debt	0	0	30	150	0
Other	(0)	(0)	0	(3)	(6)
Financing Cashflow	**5**	**5**	**130**	**147**	**(6)**
Net Change in Cash	**(2)**	**1**	**34**	**(6)**	**92**

Balance Sheet (AUD) (m)	FY23A	FY24A	FY25E	FY26E	FY27E
Cash	5	6	39	33	125
Accounts Receivable	1	1	0	0	30
Inventory	0	0	0	0	30
Other Current Assets	0	0	0	0	0
PPE	6	6	100	252	280
Total Assets	**12**	**13**	**140**	**285**	**466**
Accounts Payable	1	0	0	0	14
Short Term Debt	0	0	0	0	0
Long Term Debt	0	0	30	180	180
Total Liabilities	**1**	**1**	**30**	**179**	**244**

Ratios	FY23A	FY24A	FY25E	FY26E	FY27E
ROE (%)	(56.4%)	(29.5%)	(3.3%)	(3.4%)	70.5%
Gearing (%)	(77.8%)	(85.9%)	(9.2%)	58.0%	19.8%
Net Debt / EBITDA (x)	0.8	1.7	2.6	(41.7)	0.3

Binding offtake for Sorby Hills

Boab Metals has executed a binding offtake agreement with Trafigura for the lead-silver concentrate produced from the Sorby Hills Lead-Silver-Zinc Project located in the Kimberley Region of Western Australia.

The offtake agreement is for 75% of the concentrate at LME prices. The agreement also comes with a US$30m prepayment facility.

Trafigura is one of the world's leading commodity traders and we view this announcement as a strong endorsement of the Sorby Hills Project. The prepayment will cornerstone the financing process for the project with Boab now aiming for a Final Investment Decision in mid-2025.

We expect Boab to now re-engage with the Northern Australia Infrastructure Facility (NAIF) who may provide a significant proportion of the required debt funding.

We model the project required around A$280m in funding (including working capital) which we assume will consist of A$180m in debt and A$100m in equity. Some of the equity may be provided by a strategic partner.

Figure 1: Key Offtake Terms

Seller	Sorby Hills Pty Ltd ("**SHPL**") (100% subsidiary of Boab)
Buyer	Trafigura Asia Trading Pte. Ltd.
Volume	If Financial Close on the Prepayment Facility is achieved, the offtake will be for 75% of lead-silver concentrate produced at Sorby Hills, (minimum 531,000 tonnes, ~7 years based on the FEED Study production schedule). If Financial Close on the Prepayment Facility is not achieved, the offtake will be for 25% (or greater, at SHPL's discretion) of lead-silver concentrate produced at Sorby Hills (minimum 177,000 tonnes) provided that if Boab exercises its option to terminate the Prepayment Term Sheet or obtains alternative financing for development and construction of the Project, the offtake will be for 50% (or greater, at SHPL's discretion) of lead-silver concentrate produced at Sorby Hills (minimum 354,000 tonnes).
Metal Pricing	For Lead: LME Cash Settlement price averaged over the relevant quotational period. For Silver: the official LBMA Silver price averaged over the relevant quotational period.
Payables	Typical payabilities for Lead and Silver
Treatment Charge	Benchmark linked Lead Treatment Charge reverting to a simple average of the Benchmark and Spot Lead Treatment Charge if Financial Close is not achieved on the Prepayment Facility

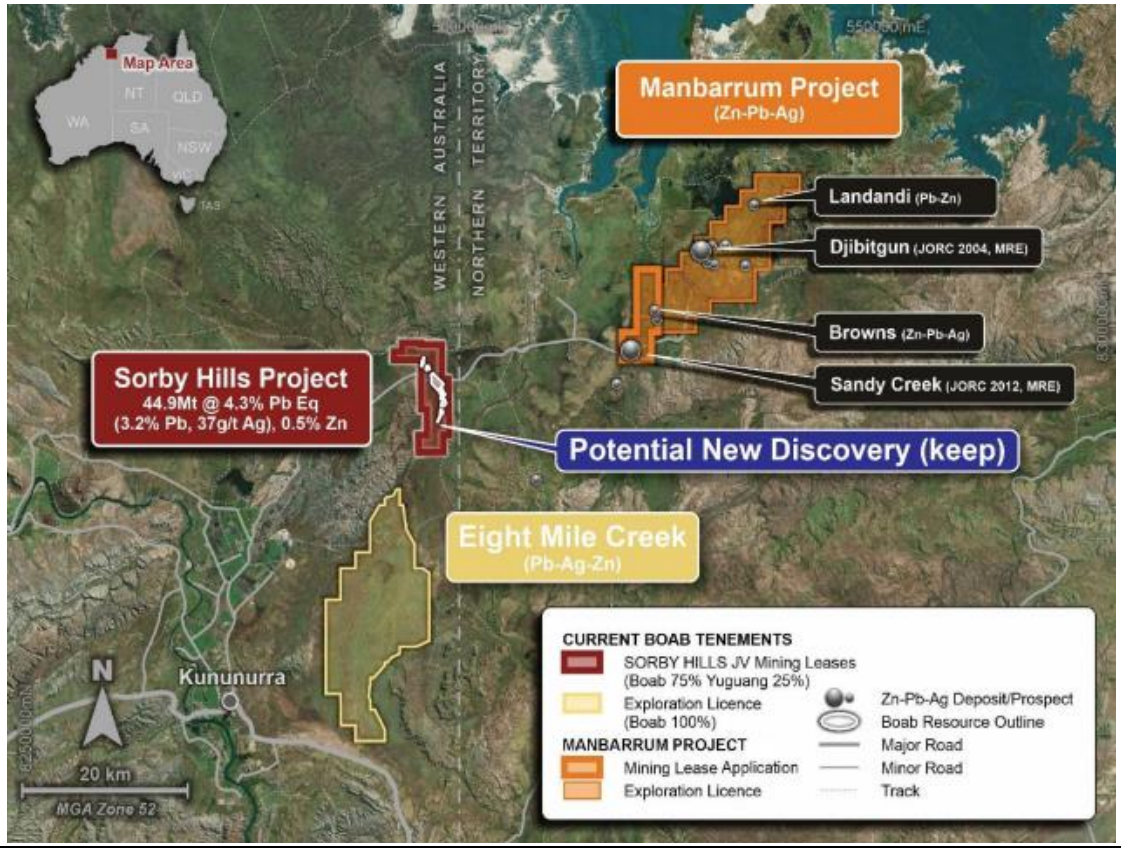
Source: BML ASX release 10 Dec 2024

Figure 2: Key Prepayment Facility Terms

Seller	SHPL
Guarantor	Boab
Buyer	Trafigura Asia Trading Pte. Ltd.
Facility Limit	US$ 30 million
Term	5 years from first drawdown
Interest Rate	3-month Term SOFR[1] + 5% p.a.
Grace Period	18 months interest only period (option to capitalise interest)
Repayment	42 monthly instalments following the Grace Period
Security	1st ranking security over SHPL's assets and 1st ranking security over the Company's shareholding in SHPL
Financial Close	To be achieved within 18 months of execution of the Prepayment Term Sheet, unless mutually extended, and subject to conditions precedent to financial close and drawdown.

Source: BML ASX release 10 Dec 2024

Figure 3: Sorby Hills Project Location



Source: Company reports

Figure 4: Boab Metals FEED Study Base Case Project Annual Physicals and Cashflow summary

Calendar Year	Unit	Total	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
Waste Mined	Mt	136.5	-	3.8	11.7	14.3	25.7	25.4	21.0	17.3	13.0	4.2	0.2	-	-
Ore Mined	**Mt**	**18.3**	**-**	**0.4**	**2.1**	**2.3**	**2.4**	**2.5**	**2.3**	**2.0**	**1.1**	**3.0**	**0.3**	**-**	**-**
Lead Grade	**%**	**3.4%**	**-**	**3.8%**	**4.1%**	**3.2%**	**3.8%**	**3.3%**	**3.1%**	**3.1%**	**3.6%**	**3.4%**	**2.9%**	**-**	**-**
Silver Grade	**g/t**	**39**	**-**	**24**	**39**	**28**	**60**	**50**	**22**	**27**	**42**	**41**	**50**	**-**	**-**
% Measured	%	57%	-	67%	92%	65%	72%	90%	72%	48%	17%	-	-	-	-
% Indicated	%	26%	-	33%	8%	35%	27%	9%	27%	50%	31%	31%	-	-	-
% Inferred	%	17%	-	-	-	-	1%	1%	2%	3%	53%	69%	100%	-	-
Ore Processed	**Mt**	**18.3**	**-**	**-**	**1.4**	**2.3**	**2.3**	**2.3**	**2.3**	**2.3**	**2.3**	**2.3**	**1.1**	**-**	**-**
Lead Grade	**%**	**3.4%**	**-**	**-**	**5.5%**	**3.4%**	**4.0%**	**3.5%**	**3.1%**	**3.0%**	**2.5%**	**3.5%**	**3.0%**	**-**	**-**
Silver Grade	**g/t**	**39**	**-**	**-**	**47**	**30**	**59**	**54**	**24**	**27**	**30**	**41**	**41**	**-**	**-**
Lead Recovery	%	91.6%	-	-	90.9%	94.1%	90.0%	88.0%	92.7%	94.7%	93.8%	90.3%	90.3%	-	-
Silver Recovery	%	81.7%	-	-	87.2%	86.2%	82.2%	81.4%	86.9%	86.9%	85.7%	70.4%	70.3%	-	-
Concentrate Produced	**kt**	**873**	**-**	**-**	**109**	**110**	**126**	**112**	**99**	**98**	**80**	**97**	**42**	**-**	**-**
Lead Grade	**%**	**65.8%**	**-**	**-**	**64.2%**	**65.6%**	**63.5%**	**62.4%**	**65.9%**	**66.0%**	**65.7%**	**72.2%**	**72.3%**	**-**	**-**
Silver Grade	**g/t**	**664**	**-**	**-**	**529**	**532**	**860**	**878**	**479**	**535**	**730**	**677**	**770**	**-**	**-**
Lead Revenue	A$M	1,803	-	-	198	225	260	215	207	208	165	226	98	-	-
Silver Revenue	A$M	693	-	-	59	70	131	121	57	62	71	82	40	-	-
Total Revenue	**A$M**	**2,496**	**-**	**-**	**257**	**295**	**392**	**337**	**264**	**269**	**237**	**308**	**138**	**-**	**-**
Lead Treatment	A$M	(160)	-	-	(18)	(20)	(24)	(20)	(18)	(18)	(15)	(18)	(8)	-	-
Silver Refining	A$M	(32)	-	-	(3)	(3)	(6)	(6)	(3)	(3)	(3)	(4)	(2)	-	-
Royalties	A$M	(95)	-	-	(10)	(11)	(14)	(12)	(10)	(11)	(9)	(12)	(5)	-	-
Net Revenue	**A$M**	**2,209**	**-**	**-**	**227**	**260**	**348**	**299**	**233**	**238**	**210**	**274**	**123**	**-**	**-**
Logistics	A$M	(117)	-	-	(14)	(15)	(17)	(15)	(13)	(13)	(11)	(13)	(6)	-	-
Mining	A$M	(547)	-	-	(51)	(62)	(94)	(93)	(81)	(71)	(54)	(36)	(4)	-	-
Processing	A$M	(388)	-	-	(38)	(47)	(47)	(47)	(47)	(47)	(47)	(47)	(24)	-	-
G&A	A$M	(88)	-	-	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(5)	-	-
Operating Cash Flow	**A$M**	**1,069**	**-**	**-**	**114**	**126**	**180**	**134**	**81**	**96**	**88**	**168**	**84**	**-**	**-**
Upfront Capex	A$M	(264)	(131)	(133)	-	-	-	-	-	-	-	-	-	-	-
Sustaining Capex	A$M	(26)	-	-	(12)	(1)	(3)	(1)	(0)	-	-	-	(5)	(4)	-
Net Cash Flow	**A$M**	**778**	**(131)**	**(133)**	**101**	**125**	**177**	**133**	**81**	**96**	**88**	**168**	**78**	**(4)**	**-**
Cumulative Cash Flow	**A$M**		**(131)**	**(265)**	**(163)**	**(38)**	**139**	**271**	**352**	**449**	**536**	**704**	**782**	**778**	**778**

Source: Boab FEED study June 2024

Boab moves to 100% of Sorby Hills

Boab Metals recently executed an option agreement with joint venture partner Henan Yuguang Gold & Lead Co. Ltd ("Yuguang") to acquire their 25% interest in the Sorby Hills Lead-Silver-Zinc Project located in the Kimberley Region of Western Australia.

The ability to exercise the option is subject to Boab reaching a Final Investment Decision (FID) on the Sorby Hills Project within the next 12 months. Should the option be exercised, Boab will pay Yuguang:

- Tranche 1: A$12.5m upon exercise of the option and the concurrent acquisition of Yuguang's 25% Joint Venture interest;
- Tranche 2: A$5.5M payable no later than 12mths from the commencement of concentrate production at Sorby Hills; and
- Tranche 3: A$5.0M payable no later than 18mths from the commencement of concentrate production at Sorby Hills.

In our view, this is an excellent outcome for Boab Metals and paves the way for a Final Investment Decision in coming months.

Potential to acquire the Degrussa processing plant

On 25 October 2024, Boab indicated that it was assessing multiple opportunities to materially reduce the upfront capital expenditure for Sorby Hills. The identification of available second-hand process plants has been one such initiative and the potential purchase of the available DeGrussa plant has been deemed the most technically suitable option for Sorby Hills. Over the coming quarter, Boab will work closely with preferred EPC Contractor GR Engineering Service ("GRES") to undertake a thorough review of the DeGrussa process plant and assess the technical and economic benefit of its potential incorporation into the Sorby Hills Project.

The use of the Degrussa plant has the potential to significantly reduce the capital cost of the processing plant and may reduce the funding requirements for the project from A$280m to around A$250m. That is not included in our forecasts.

Figure 5: Sorby Hills financials – Shaw forecasts

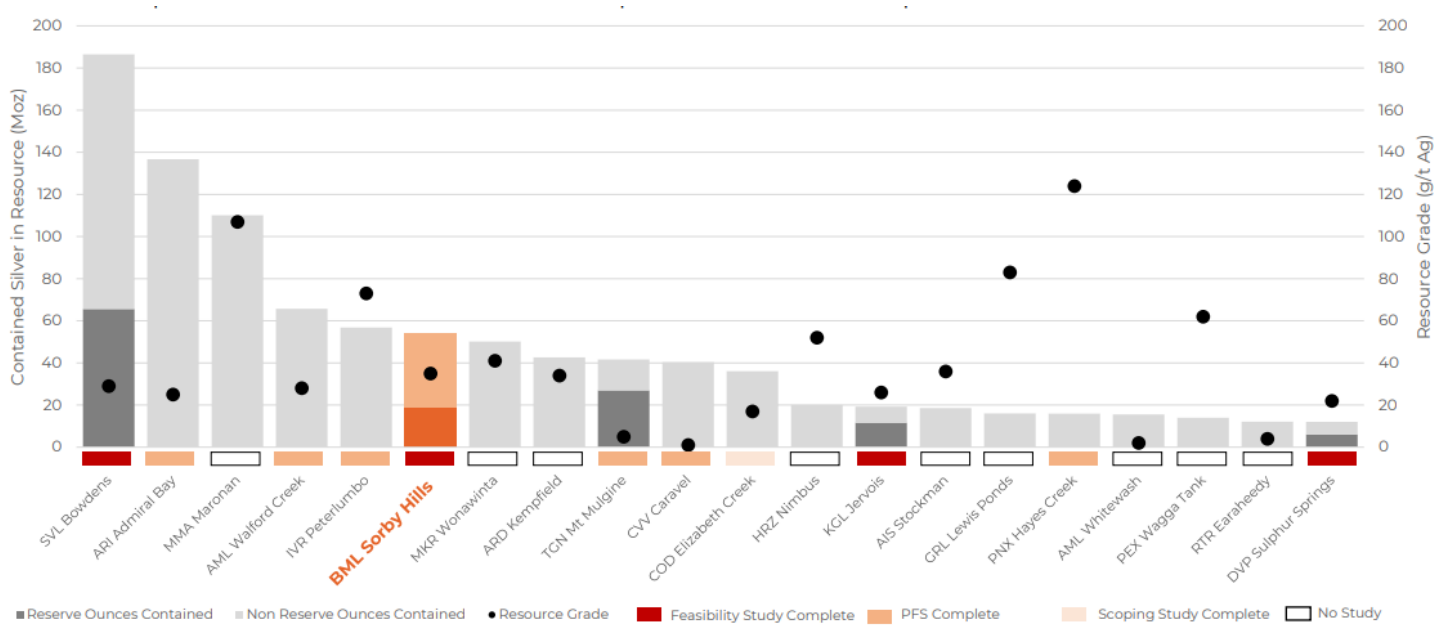
Sorby Hills (100%)	2023	2024f	2025f	2026f	2027f	2028f	2029f	2030f	2031f	2032f	2033f
Ore processed (kt)	0	0	0	400	2,100	2,300	2,400	2,500	2,300	2,000	1,100
Lead grade (%)	3.6%	5.0%	5.6%	3.8%	4.1%	3.2%	2.8%	3.3%	3.1%	3.1%	3.6%
Silver grade (g/t)	0	0	46	24	39	28	60	50	22	27	42
Lead concentrate (kt)	0	0	0	0	123	105	96	118	102	89	57
Payable lead (kt)	0.0	0.0	0.0	0.0	80.1	68.4	62.5	76.7	66.3	57.7	36.8
Payable silver (Moz)	0.0	0.0	0.0	0.0	2.2	1.8	3.9	3.4	1.4	1.5	1.3
Revenue	0	0	0	0	368	307	411	437	297	280	202
- lead revenue	0	0	0	0	182	159	148	186	164	146	95
- silver revenue	0	0	0	0	87	70	160	142	59	64	56
Expenses	0	0	0	0	174	190	206	219	200	178	102
EBITDA	0	0	0	0	194	117	205	218	97	102	100
D&A	0	0	0	0	20	22	23	10	9	8	4
EBIT	0	0	0	0	174	95	182	209	88	94	96
Net Operating Assets	2	2	82	232	249	230	210	203	198	193	192
Capex	0	0	80	150	37	3	3	3	3	3	3
EBITDA Margin (%)	0%	0%	0%	0%	53%	38%	50%	50%	33%	36%	49%
EBIT / Assets (%)	0%	0%	0%	0%	70%	41%	87%	103%	45%	49%	50%
Silver (US$/oz)	22	25	36	40	41	42	43	44	45	46	47
Lead (USc/lb)	97	97	98	106	108	111	113	116	118	121	124
AUD/USD	0.67	0.66	0.69	0.73	0.75	0.75	0.75	0.75	0.75	0.75	0.75

Source: Company reports, Shaw and Partners

Boab one of the cheapest silver exposures on the ASX

Although the Sorby Hills project is predominantly lead rather than silver (lead 70%, Silver 30%) – the Boab share price has been highly correlated with the silver price. With a 53Moz silver resource, Boab has one of the largest and most advanced silver projects on the ASX and is trading at just A$0.5/oz of resource

Figure 6: Comparison of contained Silver in undeveloped Australian Silver deposits (as at 23 October 2024).



Source: Boab Company Presentation – October 2024

Figure 7: Selected silver company comparisons

Company	Asset	Location	Mkt cap $m	Tonnes (m)	Silver grade (g/t)	Contained Silver (moz)	Cash $m	EV $m	EV/Resource/ oz
AYA Gold and Silver	Zgounder	Morocco	1740	-	420	322	158	1740	5.4
Adriatic Metals	Vares	Bosnia	1361	-	156	105	34	1327	12.6
Discovery Silver Corp	Cordero	Mexico	356	149	14	67	35	346	5.2
Silver Mines Ltd	Bowdens	NSW	173	200	29	186	11	163	0.9
Andean Silver	Cerro Bayo	Chile	166	8	146	38	11	155	4.1
Sun Silver Ltd	Maverick Springs	Nevada	117	196	40	253	6	111	0.4
Unico Silver	Cerro Leon	Argentina	88	17	77	41	13	75	1.8
Patronus	Hayes Creek	NT	87	16	124	63	1	86	1.4
Investigator Resources	Paris Silver	SA	62	24	73	57	5	57	1.0
Mithril Resources	Copalqui	Mexico	48	2	141	11	2	46	4.3
Maronan Metals	Maronan	QLD	44	32	107	110	10	34	0.3
Argent Minerals	Kempfield	NSW	32	64	32	65	3	29	0.4
Boab Metals	Sorby Hills	WA	32	47	35	53	4	28	0.5
Manuka Resources	Wonawinta	NSW	26	38	41	51	2	24	0.5

Source: Company reports, Factset, Shaw and Partners

Silver – through US$30/oz with more upside ahead

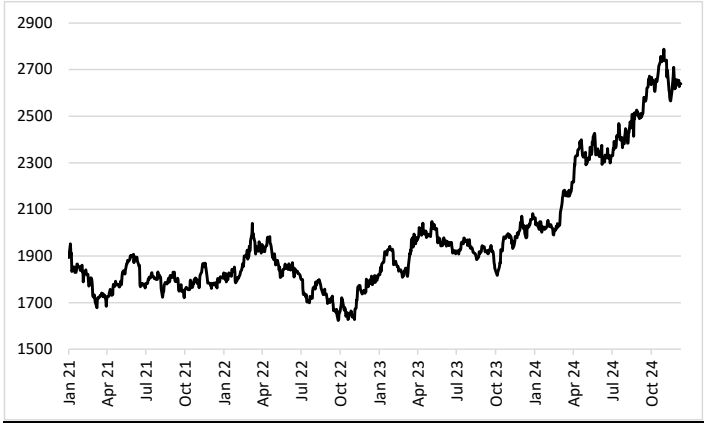
The silver price has rallied through US$30/oz in 2024 and is up 31% year-to-date.

There are two main drivers of the increase:

1. A rally in sympathy with gold. The gold price reached an all-time of $2,788/oz on 30th Oct 2024 and looks like heading higher as the US Fed commences cutting rates. Gold is also being driven higher by geopolitical tensions and the move from non-OECD countries to move away from the USD as the global currency standard.
2. The fundamentals of supply/demand for silver look very supportive for further price increases. Silver has strong demand characteristics due its demand for industrial applications in solar panels.

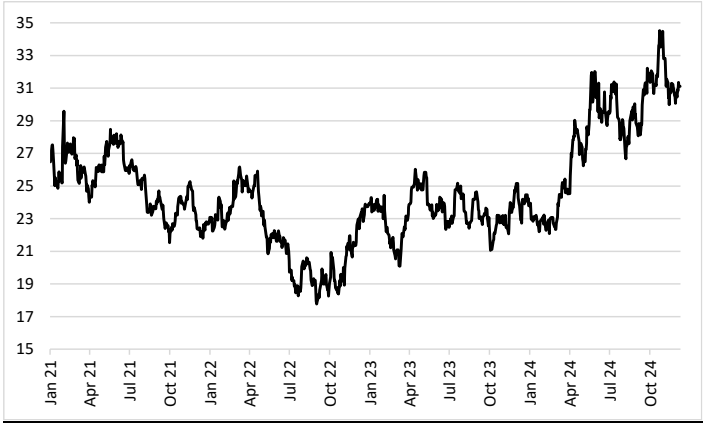
Since early 2021 the gold/silver ratio has increased from its long run average of ~70x to 85x today. For silver to maintain its ratio with gold it would need to rally to ~US$38/oz.

Figure 8: Gold (US$/oz)



Source: Factset

Figure 9: Silver (US$/oz)



Source: Factset

Figure 10: Gold/Silver ratio (x)

Source: Factset

Silver – growing demand from solar power

Silver is a soft and lustrous metallic element that is unique as a commodity and currency. Of all metals, it has the highest electrical and thermal conductance and optical reflectivity. Throughout history it has been used as a white metal in jewellery or coins; as with other precious metals, a protection against inflation. More recently it is being used for industrial purposes. Solar panels are now ~11-14% of total silver demand. Its extensive industrial use is somewhat regulated by silver's higher relative cost to other metals.

The photovoltaic cells used in solar panels extensively rely on silver due to its exceptional electrical conductivity and thermal properties. According to industry estimates, approximately 20 grams of silver is required per kilowatt of solar panel capacity. With the increasing installation of solar panels worldwide, the demand for silver in the solar industry has experienced substantial growth. In 2020 solar energy installations reached a record-high 139 gigawatts (GW), contributing to a demand for around 8,000 metric tons of silver.

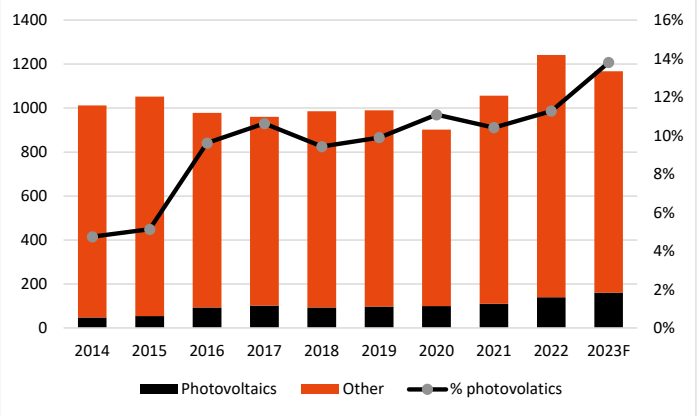
Silver's excellent light reflection properties are another significant driver of its demand in solar applications. By coating the back surface of solar cells with silver, it can effectively enhance the efficiency of the panels. Studies indicate that silver back contacts can improve the conversion efficiency of solar cells by up to 5%.

The durability and corrosion resistance of silver in solar panels have quantifiable benefits as well. The use of silver coatings ensures the longevity and reliability of solar cells, reducing maintenance costs and increasing the lifespan of panels.

In terms of affordability and cost-effectiveness, silver is an attractive option for solar panel manufacturers. The cost of silver accounts for a relatively small portion (<5%) of the total solar panel production expenses.

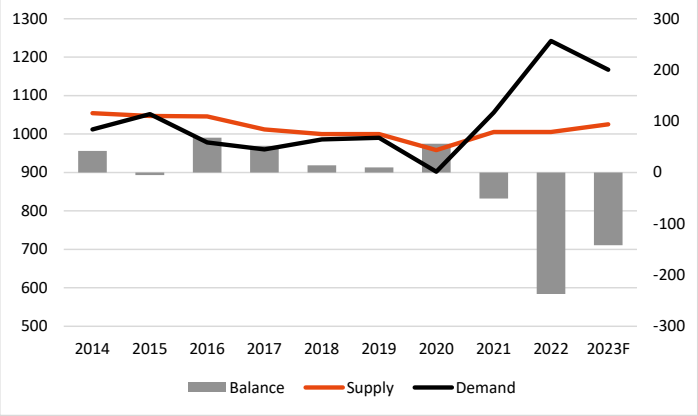
According to The Silver Institute, the silver market moved into a substantial supply deficit in 2022 due to strong demand from net physical investment. The market is remained in deficit in 2023 with the negative balance being made up by drawdowns from exchange traded products.

Figure 11: Silver demand/usage (Moz)



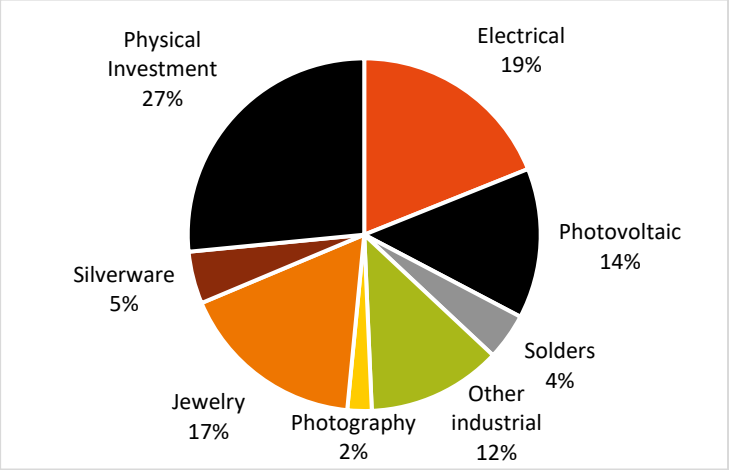
Source: The Silver Institute

Figure 12: Silver supply v demand (Moz)



Source: The Silver Institute

Figure 13: Silver usage 2023

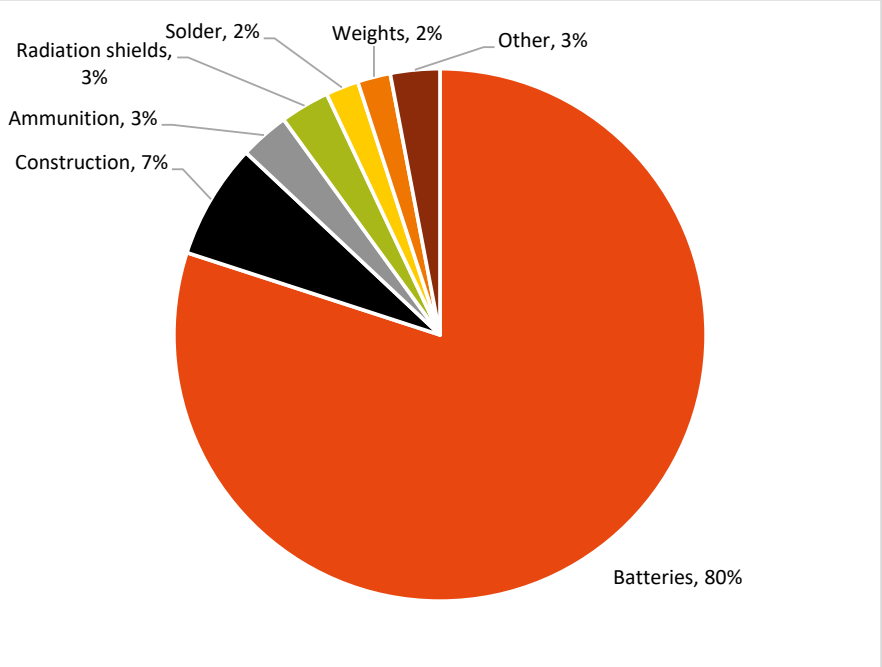


Source: The Silver Institute

Lead – the original and reliable battery metal

Lead is a versatile metal that has been used for centuries due to its unique properties. It is soft, dense, and heavy, making it ideal for various applications such as batteries, construction, and radiation shielding. Approximately 80% of all lead is consumed in the production of lead-acid batteries.

Figure 14: Lead usage 2023

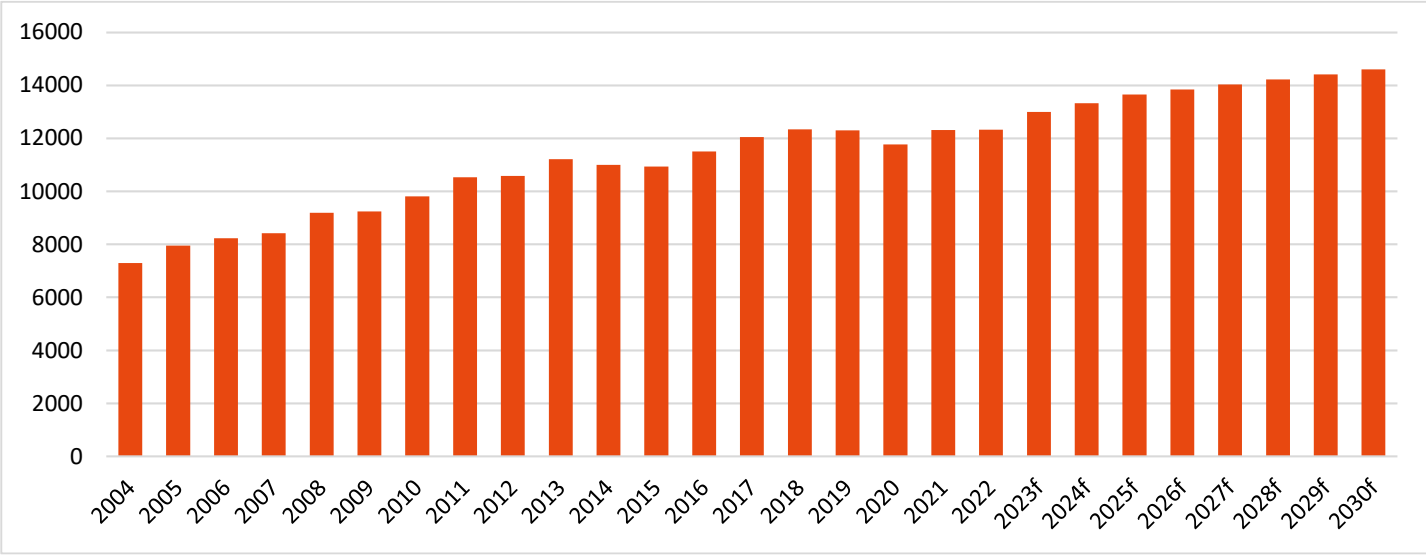


Source: ILZSG, ILA, Shaw and Partners

It is a common misperception that demand for lead is falling as lead-acid batteries are replaced by lithium-ion batteries and the usage of lead in industrial applications reduces due to its toxicity. In reality, lead consumption has increased by an average 3.2% per annum from 2004-2022 and we forecast further annual growth of 2.2% to 2030.

It is certainly true that lithium-ion batteries have become the dominant battery technology, but the reliability of lead-acid batteries will continue to result in demand growth for telecommunication, uninterruptable power supply (UPS) and for starter/lighting/ignition (SLI) batteries in both internal combustion and electric vehicles. Most electric vehicles include a lead-acid battery to power critical functions in the vehicle.

Figure 15: Annual Lead Consumption (kt)



Source: ILZSG, Statista, Shaw and Partners forecasts

Figure 16: Lead usage

Use	Description
Batteries	Lead has good electrical conductivity and resistance to corrosion. The major use for lead is in lead-acid batteries to store power in cars, wheelchairs, lift trucks, baggage loaders, even golf carts and submarines. Batteries are important in hospitals and communication centres needing a back-up supply in case of power failures and in solar and wind power systems (to store the energy). Non-nuclear submarines rely on a bank of lead-acid batteries for extra power and for ballast to keep them upright. These batteries provide as much power in five hours as the average home uses in a year.
Health	As lead is very dense and highly absorbent, it is used as a radiation shield around X-ray, radiotherapy treatment, and nuclear equipment. It is also in computer screens and TV tubes to absorb radiation.
Sound and vibration insulation	Lead's density and softness also makes it an excellent absorber of sound, so thin lead sheets are laminated onto building materials such as plywood, aluminium or steel to provide sound insulation. Even whole buildings can be mounted on lead to reduce vibration problems.
Cables	Lead's ductility and resistance to corrosion makes it an excellent sheath around electrical cables, especially under the sea.
Chemical industry	Lead's corrosion resistance makes it ideal to line containers and pipes for storing and carrying corrosive chemicals.
Housing	Lead flashings (where roofs meet walls or chimneys) stop leaks, resist wind lift and do not corrode.
Weights	Lead's density makes it useful as a weight, such as for curtains, SCUBA divers and yacht keels (fishing sinkers tend not to be made from lead these days).
Solders	Lead's low melting point makes it an excellent solder, often alloyed with tin. However, due to lead's toxicity, this usage is decreasing.
Lead oxide	In producing high-quality crystal glassware, stained-glass window 'frames', colour lenses, pottery glazes and as a 'red lead' undercoat on bridges and other exposed steel structures.
Other	Ammunition, ceramics, UV barrier in PVC products, and to minimise sulphur gas emissions by industry.

Source: Geoscience Australia

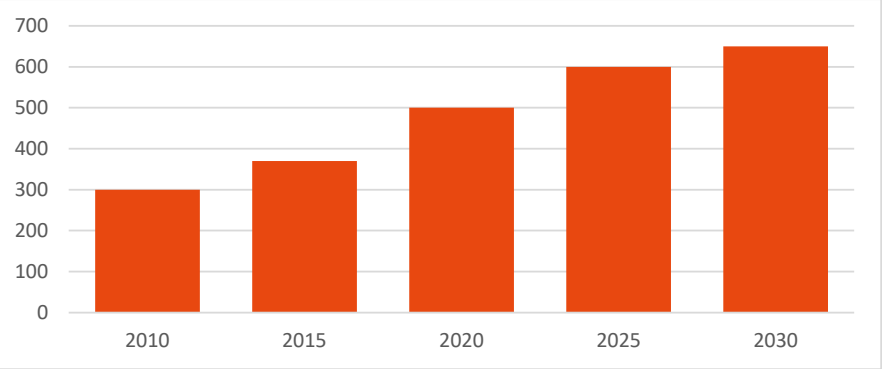
Lead-Acid Batteries

The primary use of lead is in lead-acid batteries, which are used in a wide range of applications. Lead-acid batteries account for approximately 80% of global lead consumption. These batteries are used in automobiles, trucks, boats, motorcycles, and other vehicles, as well as in backup power systems for critical infrastructure such as hospitals, data centres, and telecommunication towers.

The Consortium for Battery Innovation commissions independent market analysis of the lead battery market from Avicenne Energy. Avicenne is a market research and consulting firm who publish an annual report called "The Worldwide Rechargable Battery Market"

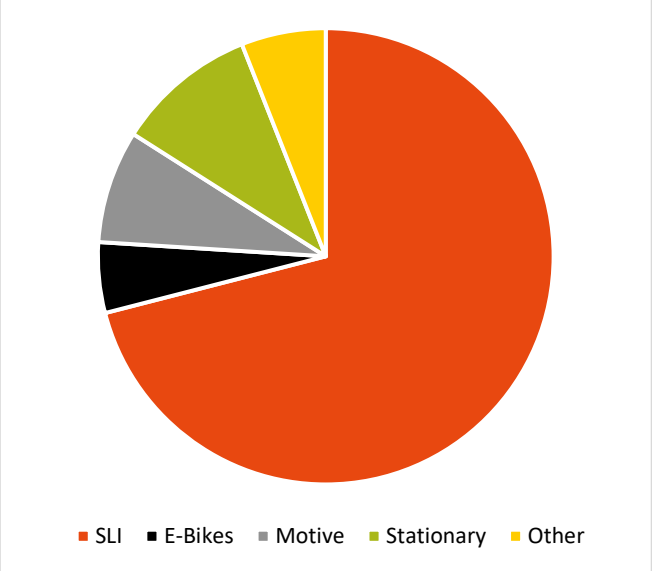
Avicenne is forecasting global demand for lead-acid batteries to increase from 500GWh in 2020 to 650GWh in 2030.

Figure 17: Lead-acid battery demand (GWh)



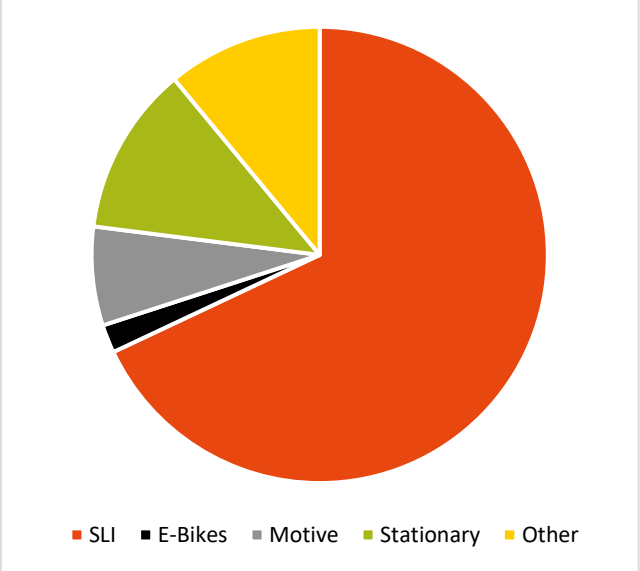
Source: Consortium for Battery Innovation, Avicenne

Figure 18: Lead-acid battery demand 2020 (500GWh)



Source: Consortium for Battery Innovation, Avicenne

Figure 19: Lead-acid battery demand 2030 (650GWh)



Source: Consortium for Battery Innovation, Avicenne

Avicenne separate their demand forecasts into four categories and 'other':

SLI (Starter/Lighting/Ignition). This includes the traditional SLI battery in an Internal Combustion Engine (ICE) vehicle, but also the newer start/stop batteries, and batteries used in electric vehicles which power essential and safety functions. Most electric vehicles include a lead-acid battery.

E-bikes. Avicenne is expecting E-bike demand for lead-acid-batteries to decline over the next decade, presumably because the non-critical nature of the application means that E-bike lead-acid batteries can be replaced by lithium-ion batteries.

Motive – These are lead-acid batteries used to power vehicles like forklifts. Modest demand growth of 1%pa is expected as usage is gradually replaced by lithium-ion batteries as their cost falls.

Stationary. Applications include telecommunications and uninterruptable power systems (UPS). These applications must provide back-up power in emergency situations and lead-acid batteries are preferred over lithium-ion batteries which have yet to proven over the time frames required for long term storage.

The advantages of lead-acid batteries

Current commercial 12V battery technology relies heavily on lead-based chemistries. Globally, over 400 million 12V lead-based batteries are produced every year to supply OEMs and aftermarket light-duty vehicle applications. Enhanced Flooded Batteries (EFB) and Absorbent Glass Mat (AGM) batteries provide significant improvements compared to conventional lead-based flooded batteries, in charge acceptance and cyclic durability, and have been deployed for micro-hybrid applications.

Lead-based batteries, especially EFB and AGM batteries, are extremely stable and durable in comparison to competing technologies; failure modes, and safety of lead batteries, are well understood by the battery supply chain. Lead-based batteries for SLI applications are covered by established international standards including battery testing procedures and service requirements.

For SLI applications, 12V batteries will need to continue to enable stop/start operations, support critical safety applications, and support Advanced Driver Assistance Systems and autonomy deployment. These applications require always-on' functionality and these batteries must not only meet rising power consumption demands, but also be 100% dependable. Battery health is a critical attribute.

Lithium-ion batteries being commercialised for 12V applications have high energy density, high cycle life, and high calendar life but currently have higher self-discharge rates compared to lead-based batteries. Standardisation is still in progress.

One of the advantages of lead-acid batteries is their performance in cold conditions. The low-temperature performance and durability of Lithium-ion batteries has improved significantly in the past few years; Lithium-ion battery manufacturers now report parity with lead batteries in terms of cold cranking (albeit only within standard industry limits). However, use of new electrode materials to ensure lithium batteries can meet cold cranking requirements, has resulted in a trade-offs in high-temperature performance and safety. Moreover, the charging performance of the batteries at low temperatures also requires further investigation.

A further advantage of lead-acid batteries is the ability to recycle them. Recycling processes for Lithium-ion batteries are relatively complex and immature; development is expected through 2030 but may never be as efficient as the closed loop recycling processes seen for lead. Moreover, 12v Lithium-ion batteries are typically based upon lithium iron phosphate chemistry that contains no economically valuable metals and thus have very low incentive for recycling.

Key risks

- The prices of silver and lead are volatile and difficult to forecast. The actual prices may differ substantially from our forecasts.
- The Sorby Hills project is not yet producing and there is a risk that Boab is unable to bring the operation in to production. The project may cost more than expected to build and may not operate as expected.
- Boab requires around $280m of new capital to finance the Sorby Hills Project. There is a risk that capital markets are not willing to fund the project.
- Forecasting future operating costs has considerable uncertainty. Our forecasts may prove to be too optimistic. If Boab's costs are higher than we expect then our cash flow forecasts will be too high.
- Smaller companies carry more significant 'key personnel' risk than larger organisations. If senior management depart the company, then it could delay projects or exacerbate operational risks.

Core drivers and catalyst

- In January 2023, Boab released the results of a Sorby Hills Definitive Feasibility Study (DFS). The DFS outlined a A$245m project processing 2.25Mtpa of ore and producing 103ktpa of a lead/silver concentrate over a 10 year mine life. The annual production of contained metals is expected to be ~67ktpa of lead and 2.2Mozpa of silver. The DFS was updated in a FEED study in June 2024 with capex increasing from A$245m to A$264m.
- The DFS resulted in an estimated pre-tax NPV of A$370M (at an 8% discount rate), an IRR of 35%, and an average annualised EBITDA of A$119m.
- Boab is now progressing the offtake agreements and debt financing and we expect a Final Investment Decision in the next 12 months. There will be a 12-18-month construction period and first production in FY27.
- The Sorby Hills Measured and Indicated Resources is 23.6Mt at 4.6% Pb Eq (3.5% Pb, 39g/t Ag) and 0.4% Zn containing 0.8Mt Pb, 0.1kt Zn and 30Moz Ag. The resource is likely to increase as further drilling and regional exploration is completed
- We model a further A$280m of capital requirements to fund pre-production capex, working capital and ongoing exploration. We expect BML to split the funding roughly A$100m with equity and A$180m in debt and prepayments.

Rating Classification

Buy	Expected to outperform the overall market
Hold	Expected to perform in line with the overall market
Sell	Expected to underperform the overall market
Not Rated	Shaw has issued a factual note on the company but does not have a recommendation

Risk Rating

High	Higher risk than the overall market – investors should be aware this stock may be speculative
Medium	Risk broadly in line with the overall market
Low	Lower risk than the overall market

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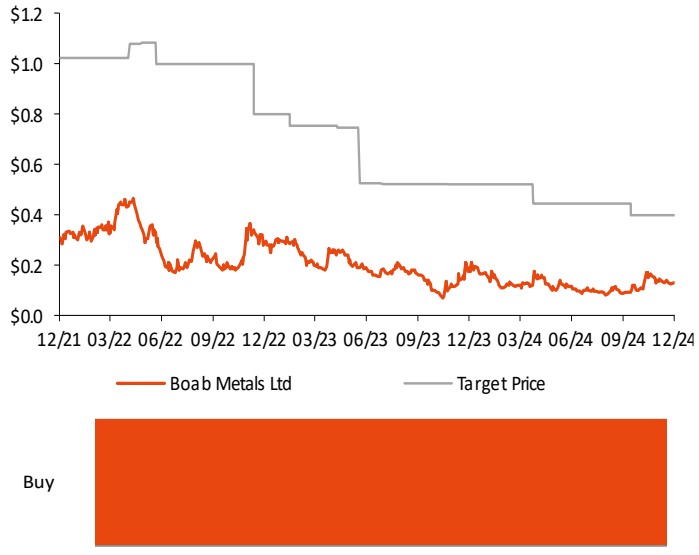
Distribution of Investment Ratings

Rating	Count	Recommendation Universe
Buy	73	92%
Hold	6	8%
Sell	0	0%

History of Investment Rating and Target Price - Boab Metals Ltd

Date	Closing Price ($)	Target Price ($)	Rating
23-Sep-24	0.09	0.40	Buy
2-Apr-24	0.14	0.44	Buy
31-Oct-23	0.12	0.52	Buy
6-Jul-23	0.18	0.52	Buy
29-May-23	0.19	0.52	Buy
19-Apr-23	0.25	0.75	Buy
24-Jan-23	0.29	0.75	Buy
20-Nov-22	0.33	0.80	Buy
31-May-22	0.30	1.00	Buy
2-May-22	0.37	1.08	Buy
14-Apr-22	0.45	1.08	Buy



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