Ticker: SVM AU	<b>Cash:</b> A\$6.0m	Project: Kasiya / Nsaru, Malingunde
Market cap: A\$250m	<b>Price:</b> A\$0.59/sh	Country: Malawi
RECOMMENDATION: BUY	TARGET (up): A\$1.40/sh	RISK RATING (down): HIGH

Today's MRE update and scoping study demonstrably place Kasiya as the best, highest grade, highestmargin undeveloped mineral sand asset globally. The unique derivation has not only enabled the best mineralogy and metallurgy, but today's graphite grades ~25% ahead of our forecast add valued revenue, and strengthen the assets ESG credentials against polluting ilmenite assets in difficult political jurisdictions. Better still, we expect the 'same again' in ~6M as neighboring Nsaru potentially doubles the existing economics. Even holding that at only half the value of Kasiya, our estimated A\$1.2bn NAV<sub>10%</sub> net of minorities equates to a FD 1xNAV of A\$2.75/sh. For now, **we maintain our BUY rating, lifting our PT from A\$1.30/sh to A\$1.40/sh** based on a 0.5xNAV multiple for Kasiya as published today, adding half of that to capture Nsaru. Our estimates for a fully-funded and fully-diluted NAV at first production of ~A\$2.75/sh demonstrate the upside here. That this asset is so far ahead of not just low-value or politically difficult peers, as well as producing assets in Africa, adds a valuable M&A angle. There is a lot to do to realise this of course, namely progressing to a full DFS with associated engineering, mine design and more. The key to our investment thesis is that investors are exposed to resource growth while this is underway, starting with a 1H22 maiden Nsaru MRE and revised scoping study around mid next year.

## MRE & scoping study demonstrate 'disruptive' world-class rutile asset with unrivaled ESG credentials

<u>MRE:</u> Sovereign's updated Kasiya **rutile MRE** stands at **605Mt** @ **0.98% rutile** at a 0.7% rutile cut off, with a high-grade subset of **68Mt** @ **1.48% rutile** at a higher 1.3% cut-off. Infill drilling since the 2Q21 644Mt has resulted in a small drop in tonnes at a similar grade. **Graphite** has been included for the first time today at 1.24%, ahead of the 1% average of recent metallurgical results. The graphite is lower grade at surface at 0.44% in the higher-grade near-surface rutile mineralisation. Today's resource covers 49km<sup>2</sup> / 38% of the mineralisation footprint of 89km<sup>2</sup> at Kasiya, and a further 40km<sup>2</sup> at Nsaru. An **updated MRE** for Nsaru and also Kasiya is targeted for early 2022. Resource constraints have assumed **hydro mining** as the optimal mining method for Kasiya, with minimal dilution and excludes recovery estimates.

-						-	
Kasiya MRE: 0.7% cut off	Mt	Rutile (%)	TGC (%)	Kasiya MRE: 1.3% cut off	Mt	Rutile (%)	TGC (%)
Indicated	304	1.02%	1.31%	Inferred	48	1.47%	0.45%
Inferred	301	0.93%	1.16%	Inferred	20	1.49%	0.43%
Total	605	0.98%	1.24%	Total	68	1.48%	0.44%
∆ 2Q21 (%)	92%	97%	-	∆ 2Q21(%)	73%	99%	-

Table 1. Updated mineral resource for Kasiya (i.e. excluding pre MRE Nsaru)
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Source: Sovereign

<u>Scoping:</u> today's study outlines a 12Mtpa operation, hydro mining soft saprolite from surface, supplemented by ~10% of feed mined by dozer-traps. Ore transported to a central plant by slurry pumps benefits from high ~48% slimes, driving higher SG and thus greater mineral transport load. Rutile is separated via conventional gravity spirals then dry mineral electrostatic separation, with graphite floated separately. Dewatered and thickened tails will initially be stored in an ex-pit facility, before moving in Y2 to in-pit storage as mining voids are created. Both concentrates are to be railed directly to the Nacala deep-water port. **Capex** of US\$332m with LOM revenue of US\$21.10/t against costs of US\$5.96/t drive an average annual EBITDA of US\$161m at US\$1,346/t rutile and US\$1,085/t graphite price for a predominantly large-flake basket sold into higher-value conventional off takers. This drives a peer-leading 2.8x revenue to cost ratio, and NPV<sub>8</sub> to capex of 2.6x, with 2.5-year payback / 36% IRR for NPV<sub>10-8%</sub> of US\$684-861m.

16 December 2021



## Figure 1. SCP modelled production profile for Kasiya

Source: SCP, Sovereign

<u>ESG:</u> pits will see progressive tailings backfill and remediation, with all population areas to be avoided given the large resource. The Malawi grid is mainly hydro powered, with 41% of power to come from a 14Mw onsite IPP solar farm. Rail access to the port further lowers CO<sub>2</sub> against peers trucking to port In addition to rutile's natural low-carbon advantage (0kg/t CO<sub>2</sub> vs. 2.8kg/t CO<sub>2</sub> for synthetic rutile conversion), management will design the project to IFC, and World Bank Equator Principles and guidance.

## Our view: MRE as expected, graphite provides positive surprise, PFS/DFS could enable high-grading

<u>Rutile:</u> the overall quantum of the MRE is less material than the M&I, which now underpins the scoping. Infill saw some tonnes removed but enabled greater fidelity of the high-grade zones (Figure 2). The geometry is advantageous, showing (i) high-grade zones along strike, and (ii) the highest grade at surface. This enables early-years-access to higher grades, exemplified by the 68mt @ 1.5% rutile at a higher cutoff. As is normal for scoping studies, ahead of full reserve conversion, the mine plan hasn't taken full benefit of this, with 'only' 1.06% LOM grade, including 1.1% for the first 14 years. We think that additional infill to better delineate the high-grade areas should allow these to be incorporated into the mine schedule. There is a balance here too, with the option to take 'one bench' (~5m) rather than the ~8-12m full ore body – this would materially lift the rutile grade, but it if backfilled would sterilise underlying ore. There is no shortage of ore here, so we would expect the PFS and DFS to show some 'one bench highgrading'.

<u>Graphite</u>: todays maiden graphite resource hasn't disappointed. Last week's metallurgical work showed ~1% graphite, hence today's 1.24% grade is an impressive beat on this. Unlike rutile, where highest grades are at surface, graphite is the reverse as near-surface weathering 'liberates away' the light graphite. This does mean that as rutile grades diminish with depth, increasing graphite should enable solid NSR's deeper in the profile. More so than the rutile, the graphite is locally enriched to higher levels, which also, like the rutile, should allow for some clever 'jewel box' scheduling once reserves are defined for the PFS / DFS.



Figure 2. Kasiya MRE (A) plan map and (B) cross-sections



## The elephant in the room: Kasiya vs peer mineral sand mines / developers

<u>Peer producing mines:</u> Today's scoping study confirms Kasiya as one of the largest, highest-grade, best product specification, lowest carbon footprint undeveloped mineral sands project globally. Specifically, at US\$25/t, the LOM inventory is the highest value mineral sand globally, lifting to US\$30/t for Y1-3 where higher-grade graphite is targeted. Mineral sands prices are reasonably transparent, but graphite pricing is bespoke to the product. Interestingly, **if we risk graphite prices by 50% the deposit is still in line with the highest value African mine**, Tronox's Namakwa operation. Given Sovereign will focus on higher-value coarse graphite against fines-dominant (low value) Syrah, this assumption is overly conservative in our view. Further, this comes ahead of any high-grading we expect once reserve geometry is better defined.

2021		Reserv	Total		In-si	tu Gra	de (%	)	\$275	\$700	\$1242	\$1372	\$1085	In-situ	Value	Recover
Project	Location	(Mt)	HM (%)	llme	Leu	Rutil	Zirc	Graph	llmen.	Leucox	Rutile	Zircon	Graph.	US\$/t	US\$bn	% insitu
Kasiya Y1-3	Malawi	30				1.10		1.54	-	-	13.7	-	16.7	\$30.37	\$0.9	-
Kasiya LOM	Malawi	298				1.06		1.12	-	-	13.2	-	12.2	\$25.32	\$7.5	-
Namakwa	South Africa	727	6.0	2.9	0.6		0.6		8.0	4.2	-	8.2	-	\$21.20	\$15.4	-
KZN	South Africa	225	5.6	3.4	0.4		0.4		9.5	2.8	-	5.9	-	\$18.74	\$4.2	-
Sierra Rutile	Sierra Leone	268	1.4			1.4			-	-	17.4	-	-	\$17.39	\$4.7	-
Ranobe (dev.)	Madagascar	586	6.5	4.8	0.1	0.1	0.3		13.2	0.4	0.9	3.9	-	\$18.42	\$10.8	85%
Kwale	Kenya	40	3.3	1.9		0.5	0.2		5.3	-	5.7	2.6	-	\$13.58	\$0.5	92%
QMM	Madagascar	358		3.5			0.2		9.6	-	-	2.7	-	\$12.37	\$4.4	-
RBM	South Africa	1,426		2.4			0.3		6.6	-	-	4.1	-	\$10.72	\$15.3	-
Moma	Mozambique	1,540	3.3	2.7		0.1	0.2		7.4	-	0.7	2.5	-	\$10.63	\$16.4	-
Grand Cote	Senegal	1,765	1.4	1.0	0.0	0.0	0.1		2.8	0.3	0.4	2.1	-	\$5.58	\$9.8	-
	Project Kasiya Y1-3 Kasiya LOM Namakwa KZN Sierra Rutile Ranobe (dev.) Kwale QMM RBM Moma	ProjectLocationKasiya Y1-3MalawiKasiya LOMMalawiNamakwaSouth AfricaKZNSouth AfricaSierra RutileSierra LeoneRanobe (dev.)MadagascarKwaleKenyaQMMMadagascarRBMSouth AfricaMomaMozambique	ProjectLocation(Mt)Kasiya Y1-3Malawi30Kasiya LOMMalawi298NamakwaSouth Africa727KZNSouth Africa225Sierra RutileSierra Leone268Ranobe (dev.)Madagascar586KwaleKenya40QMMMadagascar358RBMSouth Africa1,426MomaMozambique1,540	ProjectLocation(Mt)HM (%)Kasiya Y1-3Malawi30Kasiya LOMMalawi298NamakwaSouth Africa7276.0KZNSouth Africa2255.6Sierra RutileSierra Leone2681.4Ranobe (dev.)Madagascar5866.5KwaleKenya403.3QMMMadagascar358RBMSouth Africa1.426MomaMozambique1,5403.3	ProjectLocation(Mt)HM (%)IlmeKasiya Y1-3Malawi30298100NamakwaSouth Africa2255.63.4Sierra RutileSierra Leone2681.4Ranobe (dev.)Madagascar5866.54.8KwaleKenya403.31.9QMMMadagascar3583.53.5RBMSouth Africa1,4262.4MomaMozambique1,5403.32.7	ProjectLocation(Mt)HM (%)IlmeLeuKasiya Y1-3Malawi30304040Kasiya LOMMalawi298405040NamakwaSouth Africa2255.63.40.4Sierra RutileSierra Leone2681.4403.31.9Ranobe (dev.)Madagascar5866.54.80.11.42KwaleKenya403.31.93.55RBMSouth Africa1,4262.4403.32.7	ProjectLocation(Mt)HM (%)ImeLeuRutilKasiya Y1-3Malawi301.00Kasiya LOMMalawi2981.00NamakwaSouth Africa2980.6KZNSouth Africa2255.63.40.4Sierra RutileSierra Leone2681.41.4Ranobe (dev.)Madagascar5866.54.80.10.1KwaleKenya403.31.90.50.5QMMMadagascar3583.51.41.4RBMSouth Africa1.4262.41.4MomaMozambique1,5403.32.70.1	Project Location (Mt) HM (%) Ilme Leu Ruti Zirc   Kasiya Y1-3 Malawi 30 1.00 1.00 1.00 1.00 0.6   Kasiya V1-3 Malawi 298 1.00 0.6 0.6 0.6 0.6 0.4	Project Location (Mt) HM (%) Ilme Leu Rutil Zirc Graph   Kasiya Y1-3 Malawi 30 1.10 1.54 1.10 1.54   Kasiya LOM Malawi 298 1.06 1.12 1.10 1.12   Namakwa South Africa 727 6.0 2.9 0.6 0.6 1.12   KZN South Africa 225 5.6 3.4 0.4 0.4 0.4   Sierra Rutile Sierra Leone 268 1.4 1.5 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4	Project Location (Mt) HM (%) Ilme Leu Rutil Zirc Graph Ilmen.   Kasiya Y1-3 Malawi 30 - 1.10 1.70 1.54 -   Kasiya LOM Malawi 298 1.06 1.10 1.12 -   Namakwa South Africa 727 6.0 2.9 0.6 0.6 8.0   KZN South Africa 225 5.6 3.4 0.4 0.4 9.5   Sierra Rutile Sierra Leone 268 1.4 1.4 - -   Ranobe (dev.) Madagascar 586 6.5 4.8 0.1 0.3 13.2   Kwale Kenya 40 3.3 1.9 0.5 0.2 5.3   QMM Madagascar 358 3.5 0.2 9.6   RBM South Africa 1,426 2.4 0.3 6.6   Moma Mozambique 1,540 3.3 2.7 0.1<	Project Location (Mt) HM (%) Ime Leu Rutil Zirc Graph Imen. Leucox   Kasiya Y1-3 Malawi 30 30 1.10 1.54 - -   Kasiya Y1-3 Malawi 298 1.06 1.12 - -   Namakwa South Africa 225 5.6 3.4 0.4 0.4 9.5 2.8   KZN South Africa 225 5.6 3.4 0.4 0.4 9.5 2.8   Sierra Rutile Sierra Leone 268 1.4 1.4 - - -   Ranobe (dev.) Madagascar 586 6.5 4.8 0.1 0.1 0.3 13.2 0.4   Kwale Kenya 40 3.3 1.9 0.5 0.2 5.3 -   QMM Madagascar 358 3.5 0.2 9.6 -   RBM South Africa 1,426 2.4 0.3	Project Location (Mt) HM (%) Ime Leu Rutil Zirc Graph Imen. Leucox Rutil   Kasiya Y1-3 Malawi 30 30 1.10 1.54 - 1.37   Kasiya Y1-3 Malawi 298 1.00 1.54 - 1.37   Namakwa South Africa 225 5.6 3.4 0.4 0.4 9.5 2.8 -   KZN South Africa 225 5.6 3.4 0.4 0.4 9.5 2.8 -   Sierra Rutile Sierra Leone 268 1.4 1.4 - - - 17.4   Ranobe (dev.) Madagascar 586 6.5 4.8 0.1 0.1 0.3 13.2 0.4 0.9   Kwale Kenya 40 3.3 1.9 0.5 0.2 5.3 - 5.7   QMM Madagascar 358 3.5 0.2 9.6 - - <td>Project Location (Mt) HM (%) Ime Leu Rutil Zirc Graph Ilmen. Leucox Rutile Zirc   Kasiya Y1-3 Malawi 30 30 1.10 1.54 - 1.3.7 -   Kasiya Y1-3 Malawi 298 1.06 1.12 - 1.3.7 -   Namakwa South Africa 225 5.6 3.4 0.4 0.6 8.0 4.2 - 8.2   KZN South Africa 225 5.6 3.4 0.4 0.4 9.5 2.8 - 5.9   Sierra Rutile Sierra Leone 268 1.4 1.4 - - - 17.4 -   Ranobe (dev.) Madagascar 586 6.5 4.8 0.1 0.3 13.2 0.4 0.9 3.9   Kwale Kenya 40 3.3 1.9 0.5 0.2 5.3 - 5.7 2.6   QMM</td> <td>Project Location (Mt) HM (%) Ime Leu Rutil Zirc Graph.   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Kasiya Y1-3 Malawi 30 1.10 1.54 - 1.37 - 16.7   Kasiya Y1-3 Malawi 298 1.10 1.56 1.12 - 1.37 - 12.2   Namakwa South Africa 225 5.6 3.4 0.4 0.4 9.5 2.8 - 5.9 -   KZN South Africa 225 5.6 3.4 0.4 0.4 9.5 2.8 - 5.9 -   Sierra Rutile Sierra Leone 268 1.4 1.4 - - 17.4 -	ProjectLocation(Mt)HM (%)ImeLeuRutilZircGraphImen.LeucoxRutileZirconGraph.US\$/tKasiya Y1-3Malawi30 $30$ $1.10$ $1.54$ $  13.7$ $ 16.7$ \$30.37Kasiya LOMMalawi298 $1.10$ $1.06$ $1.12$ $  13.2$ $ 12.2$ \$25.32NamakwaSouth Africa $229$ $6.0$ $2.9$ $0.6$ $0.6$ $8.0$ $4.2$ $ 8.2$ $ 5.9$ $5.12$ KZNSouth Africa $225$ $5.6$ $3.4$ $0.4$ $0.4$ $9.5$ $2.8$ $ 5.9$ $ $$17.39$ Ranobe (dev.)Madagascar $586$ $6.5$ $4.8$ $0.1$ $0.1$ $0.3$ $ 13.2$ $0.4$ $0.9$ $3.9$ $ $$18.42$ KwaleKenya $40$ $3.3$ $1.9$ $0.5$ $0.2$ $5.3$ $ 5.7$ $2.6$ $ $$13.58$ QMMMadagascar $358$ $3.5$ $ 0.2$ $9.6$ $  4.1$ $ $$17.39$ ReMSouth Africa $1,426$ $2.4$ $0.3$ $0.2$ $9.6$ $  2.7$ $7.6$ $$$17.39$ ReMMadagascar $358$ $3.5$ $ 0.2$ $9.6$ $  2.7$ $7.6$ $$$17.37$ ReMSouth Africa $1,426$ $2.4$ $ 0.$	ProjectLocation(Mt)HM (%)ImeLeuRutilZircGraphImen.LeucoxRutileZirconGraphUS\$/tUS\$/shKasiya Y1-3Malawi30 $30$ $1.10$ $1.54$ $  13.7$ $ 16.7$ $$30.37$ \$0.9Kasiya V1-3Malawi298 $1.10$ $1.06$ $1.12$ $  13.7$ $ 16.7$ \$30.37\$0.9Kasiya LOMMalawi298 $ 1.00$ $1.56$ $1.12$ $  13.2$ $ 12.2$ \$25.32\$7.5NamakwaSouth Africa225 $5.6$ $3.4$ $0.4$ $0.4$ $9.5$ $2.8$ $ 8.2$ $-$ \$21.20\$15.4KZNSouth Africa225 $5.6$ $3.4$ $0.4$ $0.4$ $9.5$ $2.8$ $ 5.9$ $-$ \$18.74\$4.2Sierra RutileSierra Leone268 $1.4$ $ 1.4$ $   17.4$ $ -$ \$17.39\$4.7Ranobe (dev.)Madagascar586 $6.5$ $4.8$ $0.1$ $0.1$ $0.3$ $ 5.3$ $ 5.7$ $2.6$ $-$ \$13.58\$0.5QMMMadagascar358 $3.5$ $ 0.2$ $9.6$ $  2.7$ $ 51.237$ \$4.4RBMSouth Africa $1.426$ $2.4$ $0.3$ $6.6$ $  4.1$ $-$ \$10.72<

### Table 2. Sovereign in situ value vs African Mineral Sand operating mines

\$1.372/tzircon. with \$700/t leucoxene. Graphite from SVM scoping study: Recoveries: Ranobe - 2019 Toliara DFS. Kwale - 1021 auarterly report

<u>Peer development assets:</u> Comparing Kasiya to up-and-coming developers globally, the asset is again the highest value. While some assets come close such as Sheffield Thunderbird and Bluejay's Dundas, these assets have extreme hurdles to overcome, being metallurgy requiring roasting, and being frozen for the majority of the year given proximity to the north pole, respectively. Other development assets are low value, with funding only coming recently demonstrative of their likely difficulty to survive the cycle, leaving highly leveraged equity stories funded at the top of the cycle exposed to any macro headwinds.

December 2	2021			Ore	Total		In-sit	u Grade	: (%)		In-situ val.	
Company	Project	Location	Stage	Mt	нм	llmen.	Leucox.	Rutile	Zircon	Graph.	(US\$/t)	Comment
Sovereign	Kisiya: Y1-3	Malawi	PEA	30	-	-	-	1.10	-	1.54	\$ 30.37	Highest grade @ surface
Sovereign	Kasiya LOM	Malawi	SCPe	298	-	-	-	1.06	-	1.12	\$ 25.32	Large, vanilla met
Sheffield	Thunderbird	Australia	BFS	748	11.2	3.11	0.54	-	0.86	-	\$ 24.16	High Mg needs roast, small grain size, high U/Th
Bluejay	Dundas IImeni	t: Greenland	PFS	67.1	25.9	7.3	-	-	-	-	\$ 20.08	Close to north pole; exploitation & closure plans approved
Image	Bidaminna	Australia	Pre-PEA	102	2.2	1.06	0.79	0.10	0.11	-	\$ 11.19	Small and low value- dredging
Strandline	Fungoni	Tanzania	BFS	12	2.80	1.14	0.03	0.12	0.47	-	\$ 11.28	Small
Strandline	Coburn	Australia	BFS	523	1.11	0.54	-	0.08	0.25	-	\$ 5.81	Resource assemblage, no reserve breakdown published
Base	Kwale North	Tanzania	PFS	194	1.5	0.68	-	0.20	0.09	-	\$ 5.51	37% slimes, low val
												-

### Table 3. Sovereign in situ value vs peer developers

Source: SCP, Sovereign; SFX DFS reserve; SVM 4Q21 scoping; Bluejay 2Q19 PFS reserve; Strandline Coburn 2Q20 DFS and Fungoni 4Q17 DFS' for tonnes and HMC, no mineral splits published in DFS so grade splits taken from M&I. In-situ @ \$275/t ilmenite, \$700/t leucoxene, \$1242/t rutile and \$1372/t zircon, US\$1,085/t graphite

<u>Peer profitability</u>: Figure 3 takes the value of peer assemblages, and compares that to opex. This shows that the only higher margin asset is in Madagascar – current political issues there prevent the owner from progressing that asset as fast as investors would like. Adding capex, Kasiya is without peer – certain Australian assets do have similarly good revenue to capex ratios, but their extreme lower value assemblages mean that profit to capex is far inferior to Kasiya. That the quality benchmarks better than operating mines owned by larger companies, and developers, emphasizes the M&A opportunity in our view. When the political difficulties faced by Iluka in Sierra Leone, Base in Madagascar, and Rio Tinto in South Africa, plus the peer-leading  $CO_2$  of rutile against polluting ilmenite, we see this asset as firmly in the cross-hairs of majors. The current in-situ value is already ~half that of the largest mines in Africa

(Tronox, Rio, Kenmare) – given we expect Nsaru to support a potential doubling of the production / reserves, we see Sovereign's assets as the **largest, highest margin, and greenest credentialed asset** on the continent if not globally.





Source: Sovereign

## Valuation: NPV approaching a billion Australian dollars, and set to double with Nsaru

We move from an EV / in-situ valuation to a DCF, replicating the scoping study for an SCP  $1xNPV_{10\%}$  of A\$932m against a published A\$937m for a robust model. With rutile and graphite prices used close to spot contract prices (and well under spot prices), the only change we make is to deduct the 10% minority interest to convert from an asset to corporate valuation, lowering our NPV to A\$835m. We expect the next MRE, driven by the maiden inclusion of Nsaru, to take the MRE materially over 1Bt against the 300Mt inventory modelled in the PEA today. With a mine life of 25 years already, rather than extending the plant or even expanding, we think the best way to look at the scoping study as the first 'cookie' in a cookie-cutter model. In our view, it would not be unreasonable to model a second operation of the same size right now at Nsaru. However, we conservatively model a second operation at 1/2 of the first, for a group NAV of A\$1,255m.

Key inputs and NPV	Scoping	Scoping		Scoping	SCPe	SOTP project valuation*					
Mining inventory (Mt)	297.6	>>	LOM revenue (US\$m)	6,266	>>			A\$m	0/ship	NAVx	A\$/sh
ROM grade (% rutile)	1.06%	>>	LOM revenue (US\$/t)	21.1	>>	Ungeared @ build start (4	Q23)	835	100%	0.50x	0.91
Rom grade (% graphite)	1.12%	>>	LOM cost (US\$/t)	LOM cost (US\$/t) 7.56 >> Cash SCPe 3021 5		5.9	100%	1.00x	0.01		
Rutile recovery (%)	96%	>>	LOM revenue / cost (x)	2.8	>>	Cash from options		6.8	100%	1.00x	0.01
Graphite recovery (%)	62%	>>	Total build capex (A\$m)	455	>>	Nsaru at 50% of Kasiya		418	100%	0.50x	0.45
LOM throughput (Mtpa)	12	>>	Total sust. capex (A\$m)	148	>>		Asset NAV 10% US\$1346/t rutile		100 2	PT:	1.39
Rutile production (kt pa)	122	121	Rutile price (US\$/t)	1,346	~~						
Graphite production (kt pa)	80	81	Graphite price (US\$/t)	1,085	>>	*Shares diluted for options		Da Da			
Rutile Y1-3 (kt pa)	-	115	Discount (%)	10.0%	>>	Group NAV sensitised to			· · · ·	· •	-
Graphite Y1-3 (kt pa)	-	103	NPV post-tax (A\$m)	937	932	Project NPV 10% (A\$m)	R \$0.95k	R \$1.15k	R \$1.35k	R \$1.55k	R \$1.95
Mining cost (US\$/t)	1.77	>>	Less 10% minority (A\$m)	-	835	Graphite \$0.835k/t	558	801	1,042	1,281	1,763
Processing cost (US\$/t)	2.69	>>	Asset IRR post-tax (%)	36%	30%	Graphite \$1.085k/t	786	1,027	1,265	1,507	1,986
G&A (US\$/t)	0.64	>>	Payback (years)	2.50	2.75	Graphite \$1.335k/t	1,008	1,250	1,491	1,731	2,215
Trnspt to port (US\$/t)	0.86	>>	Mine life (years)	25	>>	Ungeared project IRR:	22%	26%	29%	32%	37%

Table 4. (A) SCP model inputs / economics for Kasiya & (B) Group NAV / sensitivity

Source: SCP estimates

## Recommendation: maintain BUY rating, lift PT from A\$1.30/sh to A\$1.40/sh

We apply a 0.5xNAV to our A\$835m Kasiya NPV to capture the likely MRE and also production growth ahead. As such, we maintain our BUY rating and lift our A\$1.30/t price target to A\$1.40/t based on a 0.5xNAV multiple on a diluted-for-options but not mine build basis (Table 4). With the Nsaru MRE likely to support 'the same again', we apply 50% of Kasiya valuation, also holding that at 0.5xNAV (i.e. ~0.25xNAV). We dilute for all share options, but not mine build. However, to sense check our valuation, we convert our asset NPV to a group NAV by modelling an US\$377m funding package (against US\$332m capex). Applying 65% gearing using 10% lender IRR debt, and modelling equity dilution through to first production, gives our FF FD 1xNAV10% of A\$2.73/sh at first production. Given this still accounts for Nsaru at only half of Kasiya despite both assets being similar, this upside from the current share price is clear.



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Project: USES			Funding: S	SOURCES		G <i>roup</i> NAV over time^	1Q22	1Q23	1Q24	1Q25	1Q26
Pre-build exploration:	A\$29m	1	Cash + ITM	options:	A\$13m	Kasiya NPV <mark>(</mark> A\$m)	702	772	935	1,318	1,576
Build capex:	A\$455m		DFS equ	ity, spot:	A\$21m	G&A and fin. costs (A\$m)	(98)	(95)	(95)	(97)	(77)
Finance costs (A\$m)	A\$21m	Build	equity @ 0	).5xNAV:	A\$205m	Net cash prior qtr (A\$m)	3.2	10.2	133.2	(135.5)	(278.5)
TOTAL USES:	A\$505m	65% §	geared deb	t @ 10%:	A\$273m	Cash from options (A\$m)	6.8	6.8	6.8	6.8	6.8
Buffer / drill budget:	A\$6m		TOTAL S	OURCES:	A\$512m	- Nsaru at 50% of Kasiya	234	257	312	439	525
Share data	Basic	>FD	>DFS eq	>Build	equity	NAV FF FD (A\$m)	848	952	1,291	1,532	1,753
Basic shares (m)	421.20	459.7	493.7	64	3.0	FD shares in issue (m)	494	494	643	643	643
Source: SCP estin	nates					1xNAV5%/sh FF FD (A\$/sh	1.72	1.93	2.01	2.38	2.73

Table 5. (A) Funding assumptions to drive (B) our fully-funded fully-diluted NAV estimate over time

Source: SCP estimates

## Why we like Sovereign Metals

- 1. Existing 605Mt @ 0.98% rutile comes from just 49km2 of Kasiya
- 2. Kasiya drilling over 89km<sup>2</sup> plus 40km<sup>2</sup> at Nsaru points to >1Bt global potential
- 3. Pure rutile + graphite credits lowers  $CO_2$  and adds EV credits addressing ESG agenda
- 4. On hydropower, hydro mineable, on modern rail to deep-water port with allocation
- 5. PFS-level Malingunde graphite project adds diversification and second pillar to value

## Catalysts

- 1. 1Q22: Nsaru MRE
- 2. Mid 2022: Expanded PEA to including Nsaru
- 2022: Ore to pigment CO<sub>2</sub> study

## Research

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### 16 December 2021

Ticker: SVM LN Author: B Salier B Gaspar	Price / n Rec / 0.5			sh, A\$255m \$1.4/sh			0.22x C\$2.38/sh		Asset: Country	Kasia / Nsi Malawi	aru
Commodity price	CY21E	CY22E	CY23E	CY24E	CY25E	Resource / Reserve	Tonnes	Rutile		Graphite	Toppo
Rutile price (US\$/t)	1,346	1,346	1,346	1,346	1,346	Resource	605Mt	0.98%	5.9Mt	1.24%	Tonne 7.5Mt
•	1,085	1,085	1,546	1,546	1,346		298Mt	1.06%	3.1Mt	1.24%	3.3Mt
Graphite price (US\$/t)	1,065	1,065	1,065	1,065	1,065	SCP mining inventory Project: USES	290111	1.06%		SOURCES	5.51011
SOTP <i>project</i> valuation*		٨¢m	0/chip	MAV	A\$/sh	Project: 03ES Pre-build exploration:	Ad 20m		Ŭ		A\$13n
Jngeared @ build start (4	() ) )	A\$m	O/ship	NAVx		•				A options:	
5 E	4Q23)	835	100%	0.50x	0.91	Build capex:		لمانيط		uity, spot:	A\$21n A\$205i
Cash SCPe 3Q21		5.9	100%	1.00x	0.01	Finance costs (A\$m)				0.5xNAV:	
Cash from options		6.8	100%	1.00x	0.01		A\$505m	65% §		bt @ 10%:	A\$273
Nsaru at 50% of Kasiya		418	100%	0.50x	0.45	Buffer / drill budget:	A\$6m			SOURCES:	A\$512i
Asset NAV 10% US\$1346/		1,265		PT:	1.39	Share data	Basic	>FD	>DFS eq		equity
*Shares diluted for options				et P/NAV <sub>5%</sub>		Basic shares (m)	421.20	459.7			3.0
Group NAV sensitised to			-			Ratio analysis (YT Jun		FY22E	FY23E	FY24E	FY25E
Project NPV 10% (A\$m)			-	R \$1.55k		Shares out (m)	413.4	455.2	455.2	604.5	604.5
Graphite \$0.835k/t	558	801	1,042	1,281	1,763	EPS (A\$/sh)	-	-	-	-	-
Graphite \$1.085k/t	786	1,027	1,265	1,507	1,986	CFPS (A\$/sh)	-	-	-	-	-
Graphite \$1.335k/t	1,008	1,250	1,491	1,731	2,215	EV (A\$m)	-	257.9	272.4	457.8	639.2
Ungeared project IRR:	22%	26%	29%	32%	37%	FCF yield (%)	-	-	-	-	-
Project NPV 8% (A\$m)	R \$0.95k	R \$1.15k	R \$1.35k	R \$1.55k	R \$1.95k	PER (x)	-	-	-	-	-
Graphite \$0.835k/t	503	697	889	1,080	1,464	EV/EBITDA (x)	-	-	-	-	-
Graphite \$1.085k/t	682	874	1,064	1,257	1,639	Income statement (YT	FY21A	FY22E	FY23E	FY24E	FY25E
Graphite \$1.335k/t	855	1,049	1,241	1,433	1,818	Net revenue (A\$m)	-	-	-	-	-
*Project NPV, ex fin. costs a	nd cent G&	A, discoun	ted to build	start		COGS (A\$m)	-	-	-	-	-
G <i>roup</i> NAV over time^	1Q22	1023	1Q24	1Q25	1Q26	Gross profit (A\$m)	-	-	-	-	-
Kasiya NPV (A\$m)	702	772	935	1,318	1,576	G&A (A\$m)	1.4	2.6	2.6	2.6	2.6
G&A and fin. costs (A\$m)	(98)	(95)	(95)	(97)	(77)	Finance cost (A\$m)	_	-	_	1.7	19.7
Net cash prior qtr (A\$m)	3.2	10.2	133.2	(135.5)	(278.5)	Exploration (A\$m0	2.9	8.4	12.0	-	-
Cash from options (A\$m)	6.8	6.8	6.8	6.8	6.8	Taxes (A\$m)	-	-	-	_	_
Nsaru at 50% of Kasiya	234	257	312	439	525	Minorities (A\$m)	-	_	-	-	-
									-	-	-
NAV FF FD (A\$m)	848	952	1,291	1,532	1,753	Other (A\$m)	0.9	1.4	1.3	2.9	21.0
FD shares in issue (m)	494	494	643	643	643	Net income (A\$m)	(5.1)	(12.4)	(15.8)	(5.5)	(23.6)
1xNAV5%/sh FF FD (A\$/sh		1.93	2.01	2.38	2.73	Cash flow, attrib. (YT J		FY22E	FY23E	FY24E	FY25E
Geared NAV at 1st produ						EBIT (A\$m)	(5.1)	(12.4)	(15.8)	(3.8)	(3.8)
NPV10% (A\$m)			R \$1.35k		R \$1.95k	Add back D&A (A\$m)	0.0	-	-	-	-
Graphite \$0.835k/t	976	1,243	1,508	1,770	2,299	Net change in wkg car	(0.1)	-	-	-	-
Graphite \$1.085k/t	1,227	1,491	1,753	2,018	2,545	Other non-cash (A\$m)	(1.2)	(1.3)	(1.3)	0.4	18.5
Graphite \$1.335k/t	1,470	1,736	2,001	2,265	2,796	Cash flow ops (A\$m)	(3.9)	(11.1)	(14.6)	(4.2)	(22.3)
Geared project IRR:	21%	24%	27%	30%	35%	PP&E - build (A\$m)	(0.3)	(0.1)	-	(295.6)	(159.2
NPV8% (A\$m)	R \$0.95k	R \$1.15k	R \$1.35k	R \$1.55k	R \$1.95k	PP&E - sust (A\$m)	-	-	-	-	-
Graphite \$0.835k/t	1,144	1,451	1,754	2,056	2,664	Cash flow inv. (A\$m)	(0.3)	(0.1)	-	(295.6)	(159.2
Graphite \$1.085k/t	1,426	1,730	2,031	2,335	2,941	Share issue (A\$m)	9.8	20.8	-	205.5	-
Graphite \$1.335k/t	1,701	2,006	2,311	2,614	3,224	Debt draw (repay) (A\$r	-	-	-	94.5	178.4
^Project NPV incl grp SG&A	& fin. cost	+net cash	; *diluted fo	r build equit	ty	Cash flow fin. (A\$m)	9.8	20.8	-	300.0	178.4
Prod'n (Y1 from 4Q25)	Y1	Y2	Y3	Y4	Y5	Net change in cash (As	5.6	9.5	(14.6)	0.2	(3.1)
Rutile prod'n (000t)	63	126	126	126	126	EBITDA (A\$m)	(5.1)	(12.4)	(15.8)	(3.8)	(3.8)
Graphite prod'n (000t)	57	114	114	114	114	Balance sheet	FY21A	FY22E	FY23E	FY24E	FY25
Revenue / cost (x)	3.08	3.08	3.08	3.08	3.08	Cash (A\$m)	8.0	17.5	2.9	2.5	(0.7)
Rutile pro				nite prod'n		Acc rec., inv, prepaid (A	0.1	0.1	0.1	0.1	58.0
Revenue			Grapt	nte prou n	(0001)	PP&E & other (A\$m)	7.7	7.7	7.7	303.3	404.7
300kt	555C (A)				4.50/t	Total assets (A\$m)	15.8	25.4	10.8	305.9	462.0
						Debt (A\$m)		- 25.4		94.5	272.9
200kt	→		+++	→	- 3.00/t		-		-		
						Accounts payable (A\$r	0.7	0.7	0.7	0.7	0.7
100kt					- 1.50/t	Others (A\$m)	0.1	0.1	0.1	0.1	0.1
						Total liabilities (A\$m)	0.8	0.8	0.8	95.3	273.6
Okt					0.00/t	Issued capital (A\$m)	55.3	77.3	78.6	285.7	286.9
	· .	vo	Y4	Y5	0.00/1	Retained earnings (A\$	(39.4)	(52.0)	(67.8)	20.3	175.1
Y1 Y	(2	Y3	14			Liabilities + equity (A\$	15.8	25.4	10.8	305.9	462.0

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8	The analyst has conducted a site visit and has viewed a major facility or operation of the issuer	NO
9	The analyst has been reimbursed for travel expenses for a site visit by the issuer	NO

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SELL:	0
UNDER REVIEW:	0
TENDER:	1
NOT RATED:	0
TOTAL	50

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