

Wednesday, November 9, 2022



HALLGARTEN & COMPANY

Portfolio Strategy

Editor: Christopher Ecclestone
ceccestone@hallgartenco.com

Model Resources Portfolio: Lithium Lifts LME Week Mood

Performance Review – October 2022

Model Resources Portfolio

Lithium Lifts LME Week Mood

- + Thus far, global warming seems to be helping out those who feared a massive gas shortage in Europe over winter
- + Lithium prices climb ever higher while some EV-related REEs are also moving higher
- + Silver holding up better than gold, flirting with the \$20 per oz mark
- + LME Week went off well despite sloppy base metals prices
- + Oil prices have held up and oil & gas stocks are booking bumper profits
- ✗ Tin price continues to spiral down in what is now generally agreed to be a Chinese attempt to suppress the price
- ✗ Interest rates continue to climb with the first effects starting to be felt in the construction sector
- ✗ Chinese zero-covid policy and re-election of Xi give good reason to hope that the “Chinese century” is going to be even shorter than expected... lol

Mixed Bag at LME Week

Things are not getting much better, but certainly not getting worse (except for Tin). We attended some of the LME Week events in London and the mood was definitely upbeat though we were mainly moving in the specialty minerals/metals flow, rather than wallowing with base metals people. The Lithium space was like a world apart, with a very positive vibe all around. In Tin the scuttlebutt is now a general view that China is messing with the price for its own ends. May their machinations turn around and bite them on the behind.... which frequently happens.

Special mention should be made, though, of the massive own-goal scored by the LME in inviting a superannuated bigoted Colonel Blimp (Admiral Blimp?) to be guest speaker at the big LME Gala dinner. He went down like the Hindenburg, after making extremely ignorant and frankly stupid comments about Latin America, which only managed to leave all the visiting mining ministers from the continent, and everyone else, aghast. Not such great idea when the LME is trying to impress on the power of their Lithium contracts. The LME really did show they know how to top off a bad year by insulting the guests of honour at their event.

Portfolio Changes

We resolved to clean house of tired and dull gold explorers stories. Out went BTU Metals and Bold Ventures, during the month, from our **LONG** positions. We also dispatched Aclara from our LONGs as we already had two other names in the Rare Earths category and we have an indirect exposure via

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Hochschild.

We brought in Desert Mountain Energy, a Helium play, the first time we have added a Helium story as a **LONG** despite having covered the space and some names over the last two years.

Finally we decided to institute a Lithium **SHORT** in the form of the London-listed Cleantech Lithium (CTL.L).

In other **SHORT** news the benighted Galane Gold (GG.v) tried to leave behind its past by changing its name to Golconda Gold. It also consolidated 1 for 5. In theory that should have meant our target became 30cts but we figured a higher price means more scope for this one to go down so we lowered the target to 25cts. It will be interesting to see if the Botswanan government was ever paid, in full, the royalties they had been owed for many years by the company.

Solvay – Hastings – Neo Performance: The Plot Thickens

In the latest twist of one of the most bizarre mating dances in the Rare Earth world, we have the news that Hastings Technology (ASX:HAS) have signed a non-binding MOU with Solvay, covering 2.5ktpa Mixed Rare Earth Carbonate (MREC), to supply the La Rochelle separation facility in France.

In a possible piece of prescience, we wrote up the oft-ignored REE assets of Solvay in the last Monthly and mused as to why suddenly Solvay were muttering *sotto voce* about becoming relevant again in a space they once strode like a colossus (admittedly under previous management).

Solvay is a European-listed large, multi-national chemicals company (net sales €10.1b in 2021), with its downstream separation plant capable of producing ~4ktpa TREO for traditional end users including catalysts, automotive, polishing and electronics industries.

There is more to this than meets the eye.... Firstly, we see, in high summer, the owner of Hastings taking a big stake in Neo Performance Materials. This new owner turns out to be Twiggy Forrester lurking behind the arras. And yet now we have Hastings signing on with Neo's only Western "competitor"... The plot thickens... and comes after Solvay's own mutterings last month...

State of Play

The picture for the Rare Earths utilized in EVs (Neodymium, Praseodymium and Dysprosium) remains strong. Even if EV take-up slackens off (from the projections, rather than the current actual demand) due to global recession (and maybe softening of Western government hard targets on ICE phaseouts), it still implies deficits in these three REEs from 2026 onward as global demand (driven by EVs/renewables) outstrips supply.

Cashed Up and Ready to Go.... Where?

The Hastings announcement came hot on the heels of it completing an AUD\$101mn equity capital

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raising at AUD\$4.40 via a two-tranche placement (and SPP) to investors. Tranche 1 of the placement raised \$67mn and Tranche 2 raised the balance, \$33mn (and AUD\$1mn SPP), with proceeds to be used to advance the “development” of the Yangibana Rare Earths Project.

The CapEx and Funding It

In mid-2020 the company announced that its total CapEx for Yangibana had been revised to AUD\$449m from AUD\$517mn, this being due to a AUD\$68mn, or 13%, reduction based on the relocation of the Hydrometallurgical Plant. Even at these levels, the amount of funding is still eye-watering and one might wonder whether this project is actually needed at this juncture.

However, as is the way of the world in Rare Earths, in February of 2022, the company announced revised economics for Yangibana and the direct capital cost for all production and infrastructure was revised to \$354 million. The indirect capital cost, including owner’s costs, project management costs (including growth allowances) was \$228mn, resulting in a total capital cost blowout to AUD\$582mn pre-contingency. The company claimed to have conservatively allotted an additional 13% of contingency for a total capital cost of AUD\$658mn. Ergo, more than \$200mn higher than in 2020.

To fund this, Hasting has secured an AUD\$140mn loan facility from Northern Australia Infrastructure Facility (NAIF) in February 2022. This forms part of a planned AUD\$300-400mn debt package (including UFK and Finnvera) planned for the project. Apparently the NAIF portion could potentially be increased to ~\$200mn. Thus even more equity will need to be raised.

The Latest Resurrection

In our September Monthly we reported on Solvay’s cryptic announcement of plans to expand its Rare Earths operations in La Rochelle “to enter the value chain for Rare Earths permanent magnets in Europe”. However, by most accounts they were happy to announce this and then reticent to actually flesh out what they intended to do. The announcement thus came out rather half-baked.

For decades, Solvay’s predecessor firms were technology leaders in Rare Earths separation, recycling, purification, finishing and formulation. Despite its low-profile of late they claim “the plant is already active in the separation and recycling of rare earths for captive use”.

Solvay has now pinned its flag to the mast with an ambition to “create a powerful rare earths hub in Europe in the coming years”. The La Rochelle plant currently serves the automotive emissions control and semiconductors markets.

The plant (shown below) is state of the art and much bettered positioned geographically than Neo Performance Materials’ Silmet facility.

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The unquantified new investment will expand and upgrade an existing sophisticated unit that will add the production of separated Rare Earth oxides for permanent magnets to the site. Solvay's new/old hub will help develop European autonomy for these critical materials and also address the shortage of Rare Earth key elements by playing a proactive role in the recycling of magnets.

We noted last month that the EU still does not have any primary production of the Rare Earth minerals but if the solution to this is Yangibana then things start to make more sense. However, it also implies that 1.) Yangibana will be financed, 2.) it will reach production within an acceptable timeframe 3.) there will not be a surge of other projects that get ahead of Hastings. Are Solvay going to be twiddling their thumbs while Waiting for Godot?

We are intrigued by the statement that "Solvay will pursue alliances with other global champions in this field, and has active participation in European consortia to secure partnerships and funding". Does Hastings count as a "global champion"?

And why an investment by Twiggy Forrester in Neo Performance if Hastings are going off almost straight away and taking business to Solvay?

We still think that Neo are the best positioned here. We suspect the plant at La Rochelle is fundamentally better (i.e. more modern) than Silmet and definitely is better positioned logistically but Silmet is part of a real REE supply chain and has now added the flow of product from Energy Fuels (NYSE: UUUU, TSX: EFR) to the mix, while La Rochelle still has a ban on processing more material with a radioactive component.

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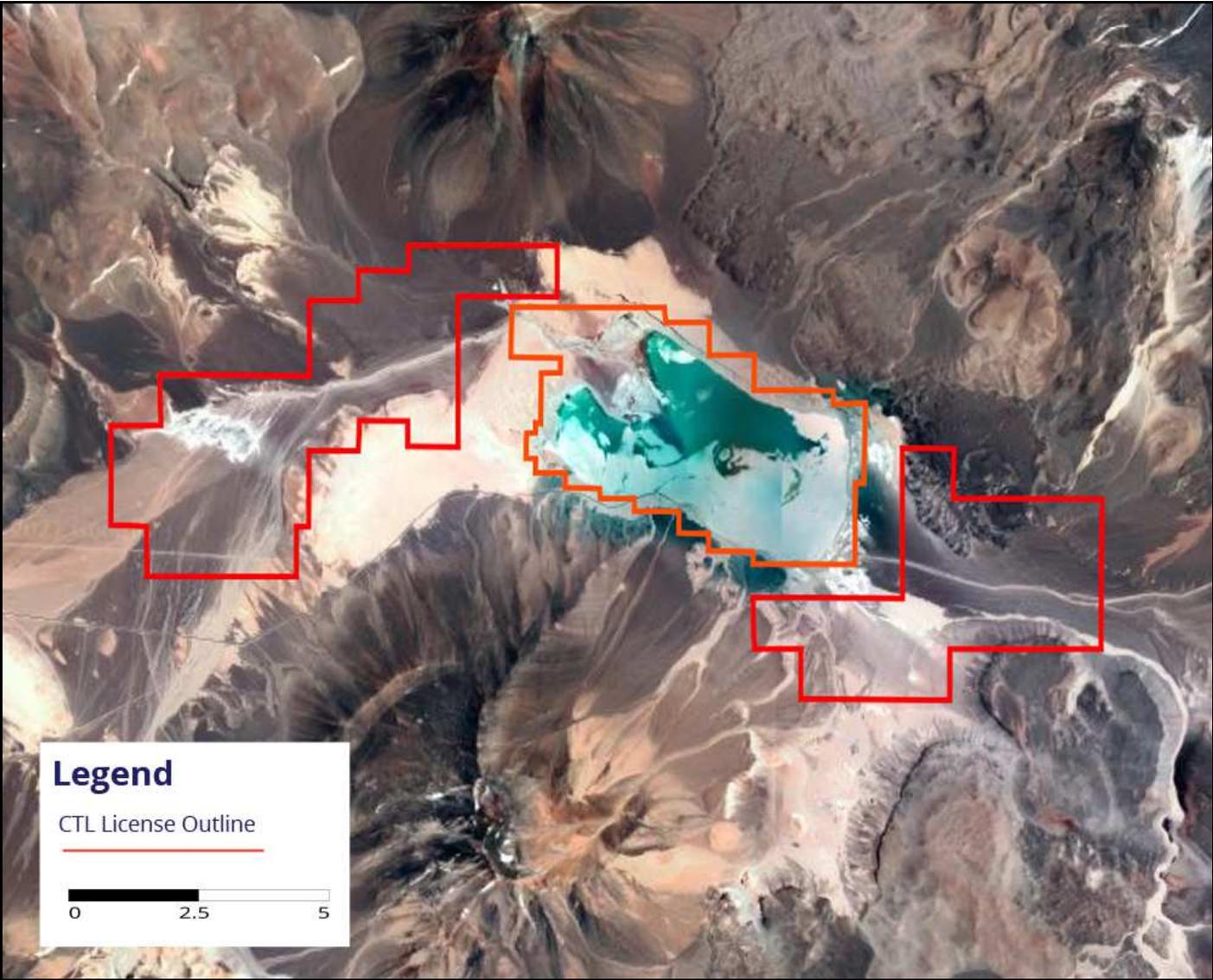


At Yangibana, the majority of the REEs are hosted by the phosphate mineral monazite, the mineral containing low levels of thorium and uranium and their decay progeny.

Results, summarised in the table that follows, indicate that uranium concentrations are relatively consistent across mineralised areas of the Yangibana project, while thorium concentrations show a greater variability.

Location	Uranium (ppm)			Thorium (ppm)		
	Average	Maximum	Minimum	Average	Maximum	Minimum
Bald Hill	10.2	44.6	2.4	142.8	1134.5	18.1
Fraser's	6.7	14.1	1.9	52.5	132.7	20.2
Yangibana North	10.7	26.4	2.5	321.6	1472.5	21.4

There is a clear association of thorium to the mineralisation. How this fits in with the Solvay deal remains to be seen. In any case, the plot thickens in the midstream of the Rare Earths space outside China.



Cleantech Lithium (LSE:CTL) – The Difference between a Lake and a *Salar*

As if the name itself was not enough to put you off, Cleantech Lithium has been somewhat of a subject of suspicion for us since we first met with them pre-IPO on the London Stock Exchange.

Lithium stocks have a certain scarcity value on the London markets. We well recall that the Great Dane of a dog in the Lithium space, Bacanora, shifted from the Canadian markets to the LSE to get itself more on the radar of the “new chums”. They bought the story initially and were finally rewarded by the Greater Fool Theory when Ganfeng bought the hound only to have it drop dead at its feet when the Mexican government decided that it was going to own all Lithium in the country, including the seriously deficient Sonora “project”.

Sensing an opportunity to fill the boots of Londoners with a new Lithium item of gauzy thinness, the promotorial class served up Cleantech Lithium. After debuting around 35 pence, it rose to nearly 65p then retreated to around 50p currently, with a sizeable financing having just been achieved.



Some Background

The company was established in 2017 and is focused on lithium exploration and development and has two lithium projects in Chile, the Laguna Verde project and Francisco Basin project.

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Its projects are both located within 300km by road from the mining centre of Copiapo in the Atacama region of Chile, within a major mining district. The total licence area of the two projects is 177km², comprising 67km² at Laguna Verde and 110km² at Francisco Basin. The more advanced Laguna Verde project features a steep valley shaped basin rimmed by volcanos, with a **hypersaline lake** covering 15.2km² covering the low point of the basin.

The Francisco Basin Project features a *salar* and lagoon with shallow surface brine, and a gradually rising plain to the south which is the focus area of the project. Two surface sampling programs in 2018 and 2019 recorded average lithium grades of 375mg/L and 694mg/L. A geophysics program based on a Transient Electromagnetic Method ('TEM') survey identified a low resistivity zone over an area of 10 - 15 km². A reconnaissance drill hole drilled in the basin confirmed the sediment aquifer thickness from 100m to 220m.

Resource(s)

At the time of the IPO, the surface lake at Laguna Verde had been subject to a JORC Code measured resource estimate of 77,834 tonnes of LCE at a grade of 246mg/L lithium. A sediment-hosted aquifer is interpreted to lie directly beneath the surface brine resource and up to 300m thick, which has been subject to a JORC Code inferred resource estimate of 1.16 million tonnes LCE at 246mg/L lithium.

Read carefully from the admission document: *"... a sampling programme of the lake brine was completed by the Geodatos team. A total of 27 samples were collected using an approximate 800m grid pattern. Of the samples, 20 were collected at the surface and 7 were collected at various depths mostly targeting the deeper eastern section of the lake with the objective of determining if the lake brine showed any stratification in brine concentration.*

The samples taken at depth used a weighted bailer attached to a rope (as shown in Figure 19) which were lowered and a latch opened to collect samples at the target depth. The average lithium grade of the 27 samples was 246mg/L with a range of 235 to 259mg/L indicating the surface lake has highly consistent brine concentration and therefore lithium grades".

Laguna Verde is NOT a salt-pan *salar* like all the other Lithium projects doing the rounds in the Lithium Triangle, it is a lake. While *salar*es frequently have a small amount of water on top (usually from snow melt) this one is a lake, pure and simple. In the water-challenged Atacama (well-known as the driest place on earth) how doable is going to be a project that exploits one of the few real lakes in the region.

What had confused us at the initial presentation, pre-IPO (and prompted a question from us) was how (on the basis of a mere 27 water samples) the company could have come up with a Measured Resource? This we still do not understand.

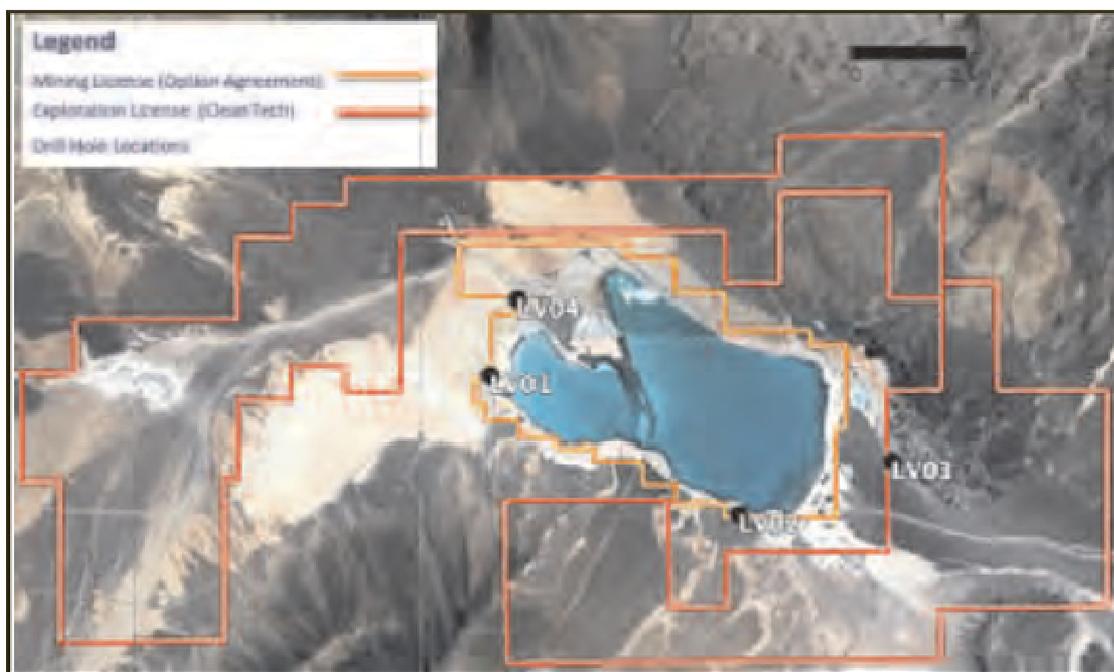
The company then announced in mid-September a new JORC-compliant resource estimate of 1.5mt LCE at 206mg/L lithium. Most of the resource was attributed as Measured + Indicated. The resource estimate was undertaken in August 2022, post a four-well drilling program that was completed in the

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first half of 2022. The targeted holes are shown on the very fuzzy map (from the Admission Document) which we repeat below.

This resource drill program, comprising four holes, was completed in 1H22, with the resource upgrade based on three of the four holes sampled prior to the Chilean winter break.

Initially this challenged our imagination as to how one drills a lake that is, obviously, liquid? But then we see that the drillholes are on the lakeshore (shown on the map that follows). Then we start to wonder how comps between the old resource (taken from samples of the lake water) and those of these drillholes can be made. Surely we are talking apples and oranges in mineralisation here?



The latest JORC-compliant resource estimate increased by 22% to 1.51 million tonnes LCE at a grade of 206mg/L, with 53% of the resource now in the Measured and Indicated category (0.803 million tonnes LCE) according to the company's release.

We get the distinct impression that Laguna Verde is a proto-salar and maybe in a few million years will actually become what everybody else is exploiting/exploring in the region. But what do we know?!

We have resolved to put in place a **SHORT** on Cleantech Lithium in the Model Resources Portfolio with a 12-month target price of 25p.

Beware the Flamingos

When it comes to the subject of Andean flamingos we might point investors in the direction of the journal article: "*Distribution and Spatial Patterning of Flamingos in the Andean Altiplano*" by Stuart H.

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Hurlbert and James O. Keith in The Auk, Vol. 96, No. 2 (Apr., 1979), pp. 328-342.

Parting Shot

Continuing with our run of comments on redundant or hyperbolic terms touted in mining releases, websites and presentations, we get to Bankable Feasibility Study, otherwise known as one of the industry's Holy Grails, the BFS.

Once upon a time (maybe as recently as this century) there were still a handful of banks that funded mining projects and, hence if a FS was bankable, it would mean it was of a standard (pardon the pun) that these banks would be able to understand and move it forward to their commitment committees. However, never did bankable mean that a project was actually financeable and guaranteed to get funds.

The class of banks that did this has withered on the vine to be almost non-existent today. Indeed, they and the miners they might fund (RTZ, BHP) could all fit in a standard issue phone box (if you could find one of those).

So terming one's study to be "Bankable" is either naïve as to what the funding market is actually like or deceptive towards investors in implying that there is someone/something out there that will actually finance their skinny NPV ego-trips. The number of Canadian developers that have two or three of these BFS's gathering dust in a bottom drawer (and SEDAR) is quite substantial. In the Lithium space, a BFS has nothing to do with development funding and everything to do with selling control of the company.

Most companies have indeed dumped use of the term, but there are some out there (particularly those who love to string things along) who regard BFS as a step beyond DFS.... As if they don't know the meaning of the word "definitive"... but we guess they don't.

In any case, "bankable" should go the way of the dodo... and the mining finance bank.

Recent & Upcoming

In the last month we published updates on Thomson Resources and Xantippe Resources.

In coming weeks, there is likely to be an Initiation on Auxico Resources. We also expect to launch coverage on AIS Resources, a holder of a portfolio of Lithium royalties (and free carries) in the Argentine slice of the Lithium Triangle. We may also be publishing a Special Situations note on Xantippe Resources.

There is a review on the subject of Soviet Resource Classifications also wending its way towards publication. There is also a possibility of an Initiation on Sheffield Resources, a mineral sands company we highlighted in the September Monthly.

MODEL RESOURCES PORTFOLIO @ END OCTOBER							
Security	Ticker	Currency	Price	Change		12-mth	
				last 12 mths	last mth	Target	
LONG EQUITIES							
Diversified Large/Mid-Cap	Hochschild	HOC.L	GBP	0.56	-58%	-3%	£1.00
	Sherritt International	S.to	CAD	0.46	10%	21%	\$0.95
Uranium	Sprott Physical Uranium	U.UN.to	CAD	17.58	24%	8%	\$20.00
	GoviEx	GXU.v	CAD	0.23	-34%	0%	\$0.45
Zinc/Lead Plays	WisdomTree Zinc ETF	ZINC.L	USD	9.15	-2%	-2%	\$14.00
	Altaley Mining	ATLY.v	CAD	0.11	-73%	-15%	\$0.70
Silver Explorer	Southern Silver Exploration	SSV.v	CAD	0.16	-52%	-11%	\$0.40
Silver ETF	IShares Silver ETF	SLV	USD	17.62	-14%	1%	\$24.00
Gold Producer	Soma Gold	SOMA.v	CAD	0.29	-19%	0%	\$0.85
	Orvana Minerals	ORV.to	CAD	0.18	-50%	-14%	\$0.60
Gold/Antimony Developer	Perpetua Resources	PPTA.v	CAD	3.20	-51%	16%	\$7.50
Metallurgical Coal	Colonial Coal	CAD.v	CAD	1.65	11%	15%	\$2.45
Royalties	Elemental Altus Royalties	ELE.v	CAD	1.28	-4%	42%	\$1.52
Copper Explorers	Panoro Minerals	PML.v	CAD	0.13	-7%	8%	\$0.30
	Phoenix Copper	PXC.L	GBP	0.271	-58%	6%	£0.54
	C3 Metals	CCCM.v	CAD	0.06	-74%	20%	\$0.20
Tungsten Producer	Almonty Industries	AII.v	CAD	0.69	-25%	10%	\$0.95
Graphite Developer	Blencowe Resources	BRES.L	GBP	0.0459	-25%	39%	£0.09
Cobalt	Jervois Global	JRV.ax	AUD	0.49	1%	-6%	\$1.00
Vanadium Developer	Vanadium Resources	VRB.ax	AUD	0.07	17%	-30%	\$0.22

MODEL RESOURCES PORTFOLIO @ END OCTOBER							
Security	Ticker	Currency	Price	Change		12-mth Target	
				last 12 mths	last mth		
LONG EQUITIES							
Lithium	Neometals	NMT.ax	AUD	1.12	30%	-1%	\$1.50
	Lithium Power Intl	LPI.ax	AUD	0.51	59%	-6%	\$0.80
Cesium/Lithium	Essential Metals	EXX.ax	AUD	0.46	188%	0%	\$0.55
Scandium Developer	Scandium International	SCY.to	CAD	0.08	-50%	-11%	\$0.15
Gold Explorer	Cabral Gold	CBR.v	CAD	0.20	-47%	-20%	\$0.60
	Gunpoint Exploration	GUN.v	CAD	0.51	-14%	13%	\$0.75
	Desert Gold	DAU.v	CAD	0.06	-54%	-25%	\$0.32
	MetalsTech	MTC.ax	AUD	0.39	-41%	-5%	\$0.68
Rare Earths	Rainbow Rare Earths	RBW.L	GBP	0.1038	-31%	-8%	£0.30
	Neo Performance Materials	NEO.to	CAD	10.64	-39%	4%	\$24.00
Tin Miners	Alphamin	AFM.v	CAD	0.61	-24%	-8%	\$1.35
	Metals X	MLX.ax	AUD	0.25	-31%	-7%	\$0.38
Mineral Sands	Sheffield Resources	SFX.ax	AUD	0.51	57%	28%	\$0.72
Helium	Desert Mountain Energy	DME.v	CAD	2.08	-15%	-13%	\$3.70
Oil & Gas	Shell	SHEL.L	EURO	24.505	50%	9%	£24.00
SHORT EQUITIES							
Shorts	NioCorp	NB.to	CAD	1.09	9%	-24%	\$0.40
	Golconda Gold (ex-Galane Gold)	GG.v	CAD	0.40	300%	400%	\$0.25
	Cleantech Lithium	CTL.L	GBP	0.485	n/a	8%	£0.25
	Texas Mineral Resources	TMRC	USD	1.88	31%	-3%	\$0.30

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