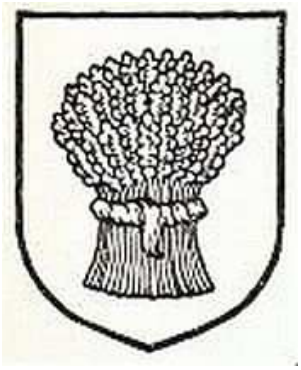
Wednesday, October 6, 2021



HALLGARTEN & COMPANY

Coverage Update

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Ceylon Graphite

(TSX-V:CYL, OTCQB:CYLYF, FSE:CCY)

Strategy: LONG

Key Metrics

Price (CAD)	$0.17
12-Month Target Price (CAD)	$0.95
Upside to Target	459%
12mth hi-low	$0.10-$0.62
Market Cap (CAD mn)	$20.91
Shares Outstanding (millions)	122.99
(Fully Diluted)	146.80

	2020	**2021e**	**2022e**	**2023e**
Consensus EPS		n/a	n/a	n/a
Hallgarten EPS (est.)		($0.02)	($0.009)	$0.019
Actual EPS	($0.04)			
P/E	n/a	(8.5)	(18.9)	9.1

Ceylon Graphite
Targeting High-Margin Production

- + M1 mine is now the focus to bring on extra production, followed by K1
- + The company has a large land package (121 km^2) with significant evidence of past production
- + In its glory days of Sri Lanka (then called Ceylon) was the world's prime producer of graphite
- + JV with LOLC may assist in financing a developing the processing facility for battery-quality graphite
- + Comparative testing of CYL's anode graphite against alternative formulations displayed a very significant advantage over synthetic graphite and that of other competitors
- + Resource estimate pending for greater market clarity
- + A key catalyst would be an offtake agreement with OEM to be negotiated to finance processing plant
- + A busy timetable to other goals, such as a financing and adding the processing plant to upgrade to battery-grade product while adding a steady stream of new mines every year
- + Development of the processing plant will increase the sales price of output from US$1,800 per tonne to potentially US$8-12,000 per tonne
- + Subject to financing, has the ability to generate double-digit cash flow per share.
- ✘ Price movements of primary Graphite (and quantifying of stockpiles) remain essentially at the discretion of the Chinese
- ✘ Vein graphite deposits are hard to quantity using conventional resource estimation methods
- ✘ The financing scene for Graphite has dramatically improved, but brings potential for shareholder dilution

Battery Metals Resurgent

In the beginning (well, 2009) there was the First Lithium Boom… it was quickly squelched by the Rare Earth juggernaut and being somewhat ahead of its time with EV's being mainly a twinkle in the eye of Toyota and Elon Musk yet to stomp across the landscape. In 2013, Graphite reared its head with investors suddenly realising that Lithium Ion batteries contained more than just Lithium. Coming in the midst of the generalized mining malaise from 2012-19, it rapidly fizzled but created a small universe of Graphite plays. Then along came the Second Lithium Boom of 2017. This blazed bright and also fizzled, with the rain on the parade being misinformed Wall Street punditry. Finally though in 2020, a Third Unified Battery Metal Boom washed upon the shore with real EV demand/production as its driving force. This lifted all battery metals to differing extents.

The Tortoise Wins

It has been several years since we first initiated coverage on Ceylon Graphite (CYL). This has been a true "Hare & the Tortoise" story as the company appeared after the first flush of the 2013 graphite boomlet but has managed to achieve production, while most other players persist in jawboning and tweaking projects that never seem to move forward.

With the long-mooted EV boom finally having dawned CYL is about to join the exclusive group of graphite producers at an extremely timely moment. The onset of the pandemic has caused some wrinkles in the timeline but momentum has been regained and a management transition has now positioned the company with veteran graphite hands at the helm.

As CYL's ten deposits in Sri Lanka (one of which has achieved production) are arguably the highest-grade *in situ* underground vein graphite on the planet at 90% + Cg, the company has exceptionally low operating costs and undemanding development capital, potentially allowing for operating margins of over 70%, after royalties.

We have long sustained that the competitive advantage of Ceylon Graphite (beyond its exceptional grades) is that it is nimble and that its staged onset of production is a better strategy than planning megamines that never get built which has been the unfortunate saga for most listed wannabes over the last ten years.

In this update we shall look at the management transition, recent progress on the mine build(s), the new local partner and a revised economic model factoring in the potential for massively enhanced value-added from constructing its own processing facility to enhance output to battery-grade material.

A New Sheriff in Town

In early 2021, the company announced that Don Baxter, who is a mining engineer, had stepped up from his role as a director of the company to assume the Chief Executive role. The new appointment, replacing Bharat Parashar, brings one of the best known names in graphite management to the helm at the company. He is one of the leading graphite experts outside of China, having built one of only two producing graphite mines in North America. He has also been responsible for advancing the development of value-added graphite products, namely coated spherical purified graphite for the lithium-ion battery sector.

With the leadership change CYL has optimized its business plan to maximize shareholder value. In this update we shall look at the revised strategy, the new alliance with Sri Lanka's leading conglomerate and the revival of interest in battery metals.

Landing a Major Partner - LOLC

In late June of 2021, the company announced it had signed a Memorandum of Understanding with two

subsidiaries of the largest Sri Lankan conglomerate, LOLC Holdings PLC. The company is listed on the Colombo Stock Exchange and has a market capitalization of LOLC Holdings exceeded US$1bn. LOLC was among the most profitable companies in Sri Lanka and has adopted a strategy of aggressive expansion into Cambodia , Myanmar, Pakistan, Philippines, Indonesia, Nigeria and Zambia.

Under the MOU, CYL, through its subsidiary, Plumbago Refining Corp B.V. and LOLC, through its subsidiaries LOLC GEO Technologies Ltd and LOLC Advanced Technologies Ltd, intend to work together to develop new graphite mines outside of the existing portfolio of CYL, and to construct and operate a state-of-the-art graphite processing facility in Sri Lanka.

LOLC, the largest corporate conglomerate in Sri Lanka, was originally founded in the 1980s as Lanka ORIX Leasing Company, which then grew into the LOLC Group. As diversification and growth continued LOLC became a holding company. In fiscal year 2020/21, LOLC recorded the highest profitability in Sri Lankan corporate history, with pre-tax profits of LKR 57bn (US$285mn).

LOLCGT is the mining arm of LOLC and holds several exploration licenses from the Sri Lanka governments Government Survey and Mining Bureau (GSMB). LOLCAT is the research arm for LOLC Group, and a joint owner of Sri Lanka's first graphene and advanced material company, currently producing graphene from ultra-pure highly crystalline Sri Lankan graphite, and making significant advances in a variety of breakthrough applications involving graphene.

Under the MOU, CYL intends to earn-in a substantial minority interest in LOLCGT. The development of any new graphite mines will be funded on a pro rata basis, will be operated by CYL, and CYL will agree to offtake all mine production for further processing.

Further, CYL and LOLC may collaborate on constructing an in-country value-added facility to upgrade the mine product further to 99.99% purity, ready for spheronization. This mine production will be originated from CYL's existing and planned mining operations at K1, M1, H1, P1 as well as six other potential sites under development.

Under the terms of the MOU, LOLC intends to purchase up to an aggregate of 15% of CYL's shares either as a lead order on a future financing or under separate terms with timing and terms to be detailed in a definitive agreement.

Both parties will also agree to cross-appointments of designates to CYL's board by LOLC and to the board of LOLCGT by CYL.

The cementing of this alliance with LOLC will enhance CYL's status with, and vectors of communication into, the Sri Lankan government due to the prestige of LOLC in the local economy.

Metallurgy

Samples from K1 were sent to the leading graphite testing laboratory, Dorfner Anzaplan, in Germany.

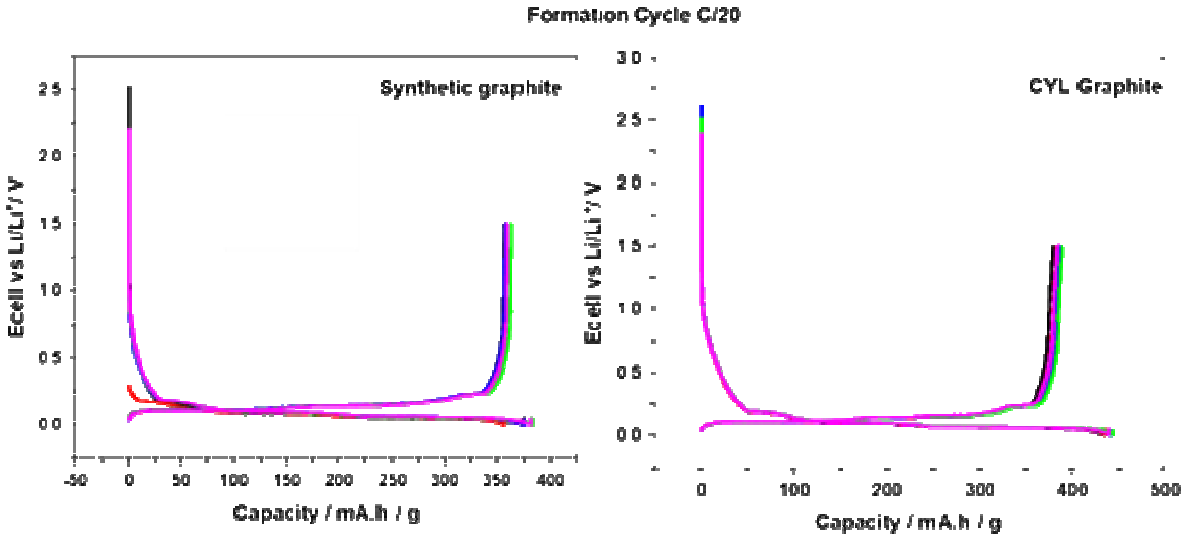
Dorfner Anzaplan certified that graphite from the K1 met the specifications of marketable battery-grade graphite. They also confirmed that the graphite obtained from the K1 project is upgradable and has a carbon content of about 99.96%.

American Energy Technologies Company tested samples of graphite from the K1 and M1 sites and certified that through simple Thermal Purification these samples can easily be upgraded to meet the specifications of marketable battery grade graphite. K1 graphite was upgraded to 99.9997wt% Cg and M1 graphite to 99.996 wt% Cg with very little cost incurred. These tests, conducted in June/July of 2019, confirmed the company's near-term goal of producing a premium grade marketable battery grade product for prospective lithium-ion battery manufacturers and other energy storage end-users.

Superior Performance for Use in EV Batteries

To be of interest to any original battery manufacturer, not only does one have to produce a sufficient quantity over a long period of time to secure a supply of graphite, the graphite has to be sourced from an environmentally-friendly source.

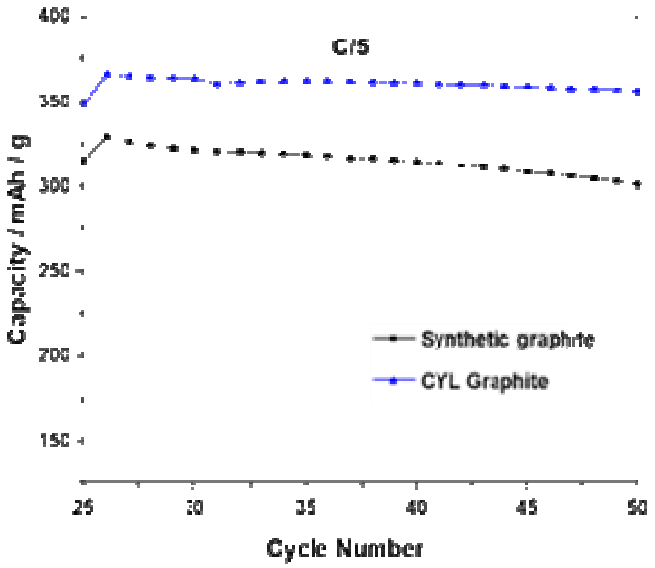
In late September, the company announced the long-awaited results of comparative testing of CYL's anode graphite against alternative formulations. Testing showed a significant breakthrough in the performance of its vein graphite anode material (C 99.995%) in coin cells for the Lithium-ion battery market. The galvanostatic charts below illustrate these results:



In tests at a leading independent facility, WMG, part of the University of Warwick's Energy Innovation Centre, CYL's vein graphite anode material far exceeded comparable anodes made with standard synthetic commercial graphite. This is the first time in battery research history that commercial spheronized vein graphite materials were tested in a lithium ion battery in a coin cell.

Results came in a 382 mAh/g for reversible capacity (RC), which is beyond what is expected for the best current commercially used synthetic graphite with an RC of 363 mAh/g. Data was collected from five separate coin cells for CYL and for commercial synthetic supplier materials.

The C/5 stable cycling gave an average reversible capacity of 353 mAh/g with standard deviation 9 mAh/g over 25 cycles compared to the Synthetic supplier 307 mAh/g. The batteries are tested at a rate of C/5, meaning 5 hours to charge and 5 hours to discharge, hence completing about 2+ full cycles per day.



Management maintains that the outstanding performance by its vein graphite material against the current commercially used synthetic graphite is due to the high crystallinity of Sri Lankan vein graphite. The initial results prove the suitability of CYL's material for lithium ion battery anodes for either stand alone or possible blending with synthetic graphite.

With this test data in hand, CYL will be able to supply a rising demand for battery-quality graphite to electric vehicle (EV) manufacturers over a potentially long mine life.

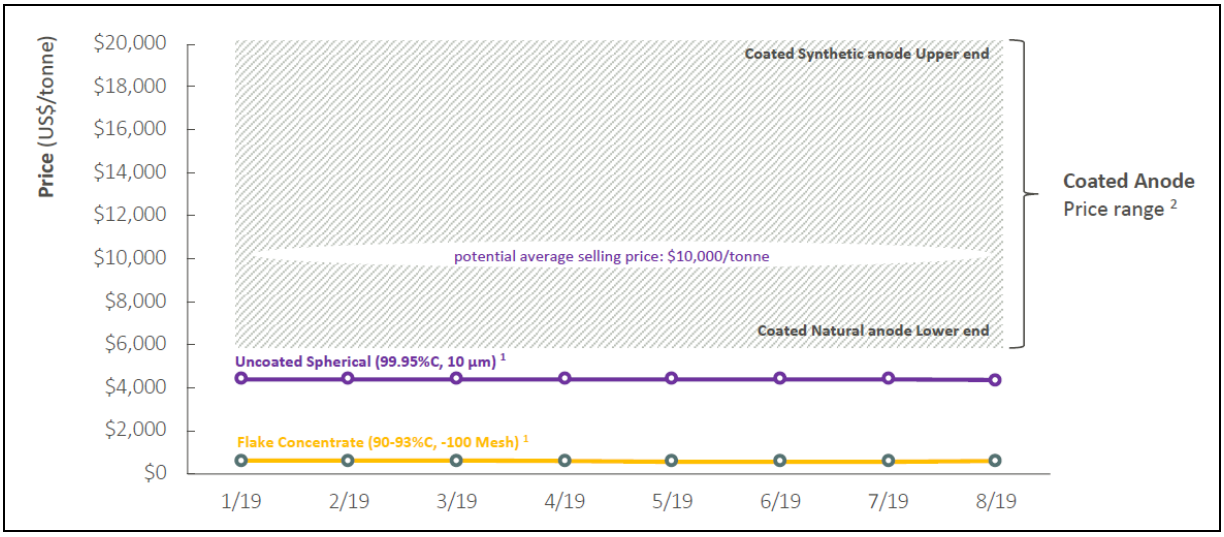
An Environmentally Friendly Process

CYL is also unique in the high-grade and purity of its vein graphite that does not require conventional primary processing (therefore no tailings, waste rock dumps or AMD issues). Furthermore, underground mining minimizes ecological impact, which is an absolute requirement for EV battery manufacturers. The proprietary process flowsheet significantly reduces number of processing steps to only four to get to battery-grade materials which is also environmentally friendly as 99.995% of the process is from a non-acid process.

Processing/Upgrading

The test results were crucial as CYL intends to upgrade its graphite to battery-grade material, critical for electric vehicles (EVs). Battery-grade graphite fetches a market value of approximately US$8,000-$12,000 per tonne, compared to US$1,800 per tonne without the upgrade.

The chart below shows the value-added component in the price of graphite vs Anode when upgraded:



Source: Benchmark et al.

In 2023, we assume the processing facility will have been completed and the company will begin selling its processed graphite at US$8,800 per tonne. The US$55.8mn (US$22.3mn attributable to CYL) processing facility could potentially be financed through LOLC debt.

Graphite on the Rebound?

As mentioned earlier, we are in the midst of a revived battery materials boom. Graphite is elemental to the Lithium Ion battery model and is the one component that, so far, no one is trying to minimize or replace.

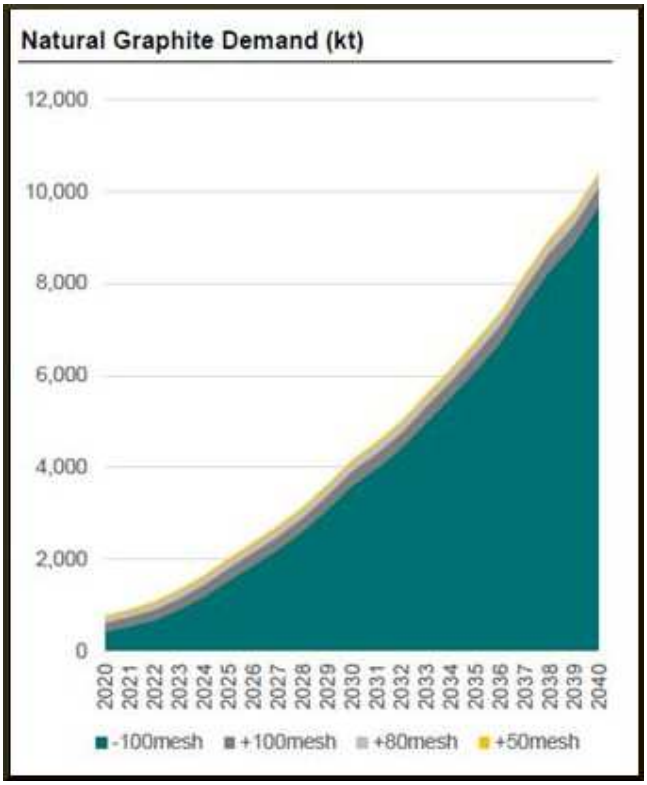
Pivotal to the outlook for most of the graphite wannabes are the action of Syrah Resources, the 800lb gorilla of the graphite space. The capacity of its Balama mine in Mozambique is 2mn tpa of potential ore throughput, for an outcome of ~350ktpa graphite concentrate.

However since coming online several years ago it has not only being massively underperforming its nameplate capacity but it has loomed as a vast overhang of potential production over the tribe of mid-tier graphite wannabes. For this reason so few projects have moved forward (excepting CYL and Tirupati) and many ASX-listed plays in East Africa have given up the ghost and repurposed themselves in other metals.

On the supply side, besides Syrah (and Tirupati & CYL), there is little happening currently though some of the more promotional denizens of the graphite space might beg to differ.

Opinions differ on what demand will be but all are linked to the increasingly frenzied prognostications about the pace of EV adoption. It is entirely legitimate to match one's expectations of EV growth to graphite growth as the two are now joined at the hip. There is no other mass application of graphite on the horizon to muddy these waters. In the chart below, are shown the projections of Benchmark as to

the likely escalation in demand.



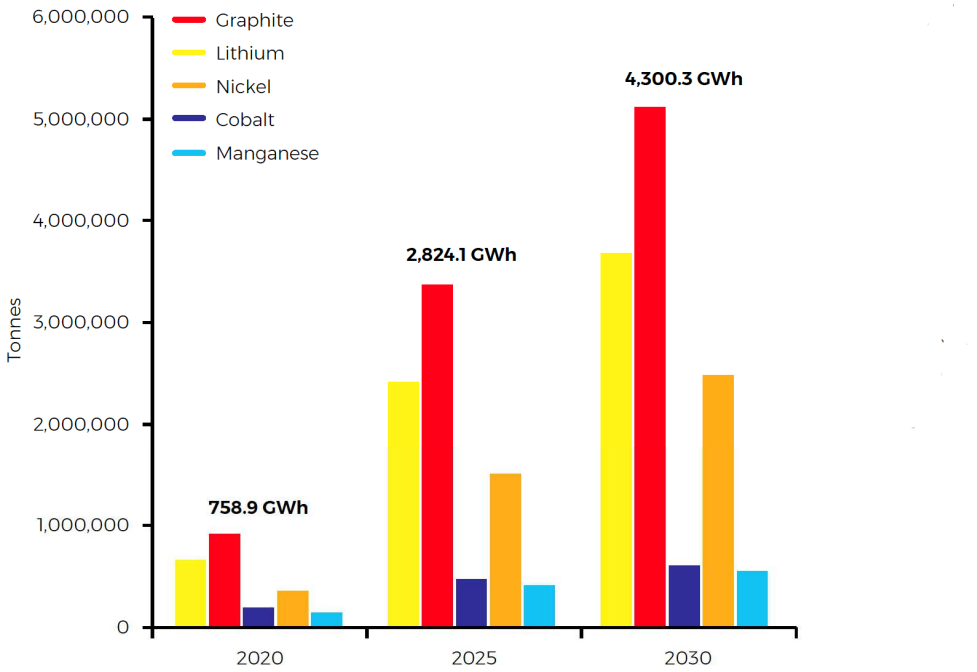
Source: Benchmark Minerals Flake Graphite Forecast Q2 2021

Under this scenario the overhang of product from could be all fully spoken for by the end of 2023 and then a new Balama would be needed in the next year and another in the next six months, and so forth, in a geometric progression.

This raises some interesting issues as Balama lookalikes are not dangling from the trees ready to be plucked and even if they were the construction time at two years plus would mean that there might very well be a substantial gap in graphite supplies from 2024 onwards. Unless, of course, that the whole EV train has to slow down to accommodate shortages.

More relevant to the big picture for CYL is the following table, highlighting the widening supply deficit for battery-grade graphite compared to other battery metals:

Raw material demand vs global lithium ion cell/Megafactory capacity



The data in this chart does not constitute a forecast, and assumes 100% utilisation rates
Benchmark's forecast numbers are available via a separate subscription, please contact info@benchmarkminerals.com for further information

That said, insiders (i.e. battery makers in the know) should be buying Balama's excess product now at "low" prices if they perceived such a coming shortage and yet they are not. Are they whistling past the graveyard or do they know something that the pundits do not?

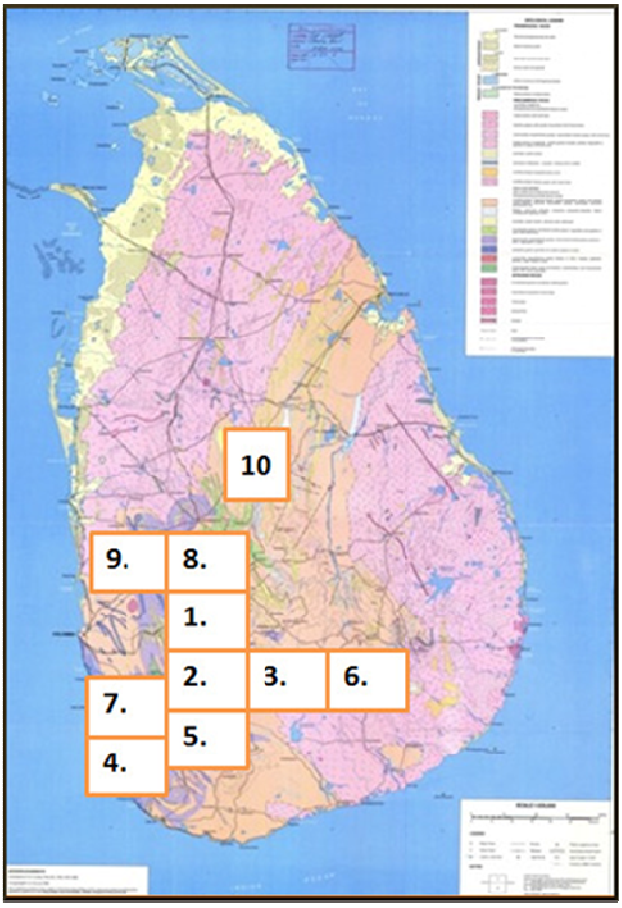
Ceylon Graphite's Assets

The company's total land package is 121 km^2 (121 grids at 1x1 km) that comprises most of the geologically identified graphite resources on government land in Sri Lanka (excluding mines currently in production).

The projects and the number of grids of which they are comprised are:

1. Avissawella 4 grids
2. Rathnapura 25 grids
3. Balangoda 2 grids
4. Ambalangoda 8 grids
5. Morawaka 2 grids
6. Nuwaraeliya 2 grids
7. Mathugama 24 grids
8. Kegalle 22 grids
9. Attanagalle 29 grids(K1, H1, P1)

10. Malsiripura 5 grids (M1)



AMC Mining Consultants conducted an explorative site visit of 43 of the 121 grids in the first half of 2013 in the Western Province of Sri Lanka. Ceylon Graphite has exclusive exploration licenses on the majority of the most prospective areas. These were identified by the company's geological team, in consultation with the Sri Lankan Geological Survey and Mining Bureau (GSMB).

Geology

Sri Lanka is known to be underlain up to 90% by Proterozoic high-grade metamorphic rocks with Proterozoic sediments, particularly along the coastal regions. Vein graphite is known under various names including crystalline vein, Plumbago, Sri Lankan graphite, and Ceylon graphite. The name "Sri Lankan" and "Ceylon" are commonly used for vein graphite since the island is the only area to produce this material in commercial quantities.

Of all the natural graphite materials vein graphite is probably the most difficult to describe geologically

and various theories of its origin have been presented. As the name suggests, vein graphite is a true vein mineral as opposed to a seam mineral (amorphous graphite) or a mineral that is disseminated throughout the ore rock (as in flake graphite). Seam minerals have some unique properties including their being non-contemporaneous with the country rock, steeply inclined (vein orientation), and subjected to filling by a host of minerals, especially those of hydrothermal origin.

The graphite veins in Sri Lanka are unique because of the large scale of their occurrence and their high crystallinity that can extend for kilometres. Similar graphite veins are found in high grade metamorphic terranes of southern India but at a smaller scale though.

Vein graphite deposits of Sri Lanka have received more attention due to their high purity (about 95- 99% of pure carbon), extensive mineralization with large reserves, high crystallinity and mode of occurrence.

Licenses

In late August 2019 the company announced that its wholly-owned subsidiary Sarcon Development (Pvt) Ltd had been granted an industrial mining licence category A for the K1 project at Karasnagala from the Geological Survey and Mines Bureau (GSMB).

The GSMB is the mining regulator in Sri Lanka. An industrial mining license category A (IMLA) is the highest category license in Sri Lanka and grants exclusive rights to mine, process and trade in graphite mined within the area specified in the license. It also allows for underground multi-borehole blasting, commercial production, use of all mining machinery and equipment and the export of graphite.

This was an important step. Historically the GSMB has granted just four IMLA licenses for graphite mining in Sri Lanka including the Sarcon/Ceylon Graphite license. CYL managed to achieve this license in a relatively short time.

Resource Estimate

Vein graphite deposits are hard to quantity using conventional resource estimation methods, though the rich history of Sri Lanka as one of the premier producers of high quality graphite is beyond dispute. The difficulty in targeting veins from surface is notorious but conversely the evidence is clear that Sri Lanka's mine have a history of continuing at depth and along strike, in many cases with rising grades and widths at depth.

Currently, CYL has no NI43-101-compliant resource estimate on any of its mines, however, the company's geologist has validated the unconfirmed historic work. The company expects to be able to report a maiden NI43-101-compliant resource estimate which will provide greater visibility to the market.

Although we expect the maiden resource estimate to initially be small relative to the resource potential, the high-grade graphite veins tend to run for kilometres at depth and, therefore, management expects

each mine to have a long mine-life.

Background to the K1 project

The K1 project is the prime development focus. The K1 site was selected for its historic crystalline graphite production as it contains several abandoned mine shafts and adits and has ample dump material.

In May of 2017, the company announced assays conducted on a "pre-drilling" grab sample of historic dump material (graphite and quartzite) including substantial rock fragments of graphite from the K1 site. Samples of dump site material from history production yielded 86.63% carbon, and samples were subject to weather and oxidation from more than 50 years.

In April of 2018, the company announced the discovery of two new large graphite veins at a depth of more than 200 ft at the K1 site. Each vein is around 18 inches (46 cm) across and is situated in the ceiling of a drive on the north side of the tunnel (shown in the picture below). Samples were taken from the veins and sent to the country's Geological Survey and Mining Bureau for carbon testing. Laboratory tests indicated a Cg level of 89.2%. These samples were sent to laboratories for micronisation to 20 microns and then spheronisation tests.

The Start-Up at K1

The company announced in mid-December 2019 that the K1 mine was finally in commercial production mode and that it had sold its first container of Sri Lankan vein graphite. Production was stopped due to the pandemic at the end of the first quarter. As a result of the above the mine was shut down for most of 2020.

The Pandemic -Stop/Start in 2020

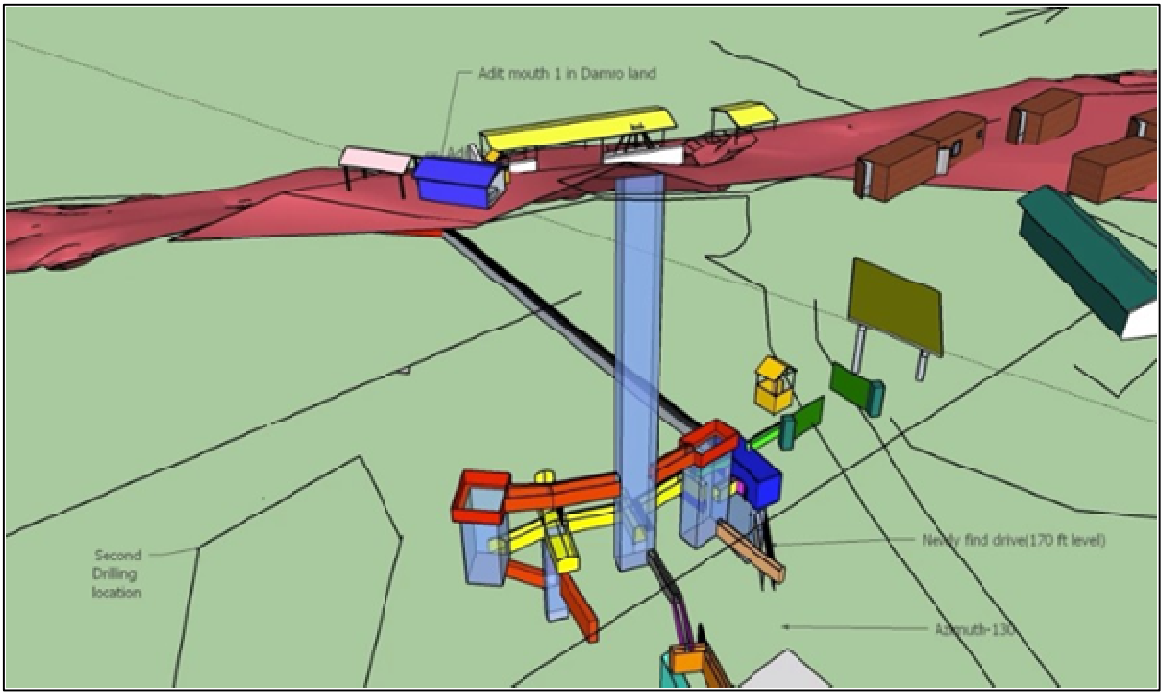
The pandemic threw mining operations all around the world into varying degrees of chaos with interruptions ranging from minimal to total shutdowns. Sri Lanka was not immune to this and during much of 2020 the government imposed various lockdowns e.g. no inter-district movement/no public transportation available. The government is still operating strict ingress/egress rules into the country.

The company needed specific provincial government approval to start work above ground given the number of people involved and then to go underground, medical testing of all employees was mandated and a plethora of government regulations. Whilst the K1 mine was never officially closed (or any staff let go) the workforce were not actively going underground.

The Mine Build at K1

At the K1 mine, the company has already refurbished the shaft down to 170 feet (with a target of 220 ft) from where it can access other parts of the old mine via winzes and adits. Reactivation of the mine is a relatively low capital expenditure (capex) operation in Sri Lanka. Every 100 feet of shaft refurbishment only costs around US$40,000.

Below is a plan of the mine:



Above can be seen the entrance to the rehabilitated shaft.

Other planned constructions are a powder magazine, collaring of the shaft and a horizontal adit into the hillside to meet the shaft for egress of ore.

Production Hits the Spot

Pilot-scale production resumed in December 2020 and it is expected that production could be running at 200 tpm and then up to 400 tpm by the end of 2022 at a grade of 95% Cg. The exceptional grade is because of the highly focused nature of graphite vein mining.

The company has estimated an unprocessed price of ~US$1,800 per tonne of raw Sri Lankan graphite and is planning on upgrading to battery marketable graphite, which would market at US$8,000 - US$12,000 per tonne.

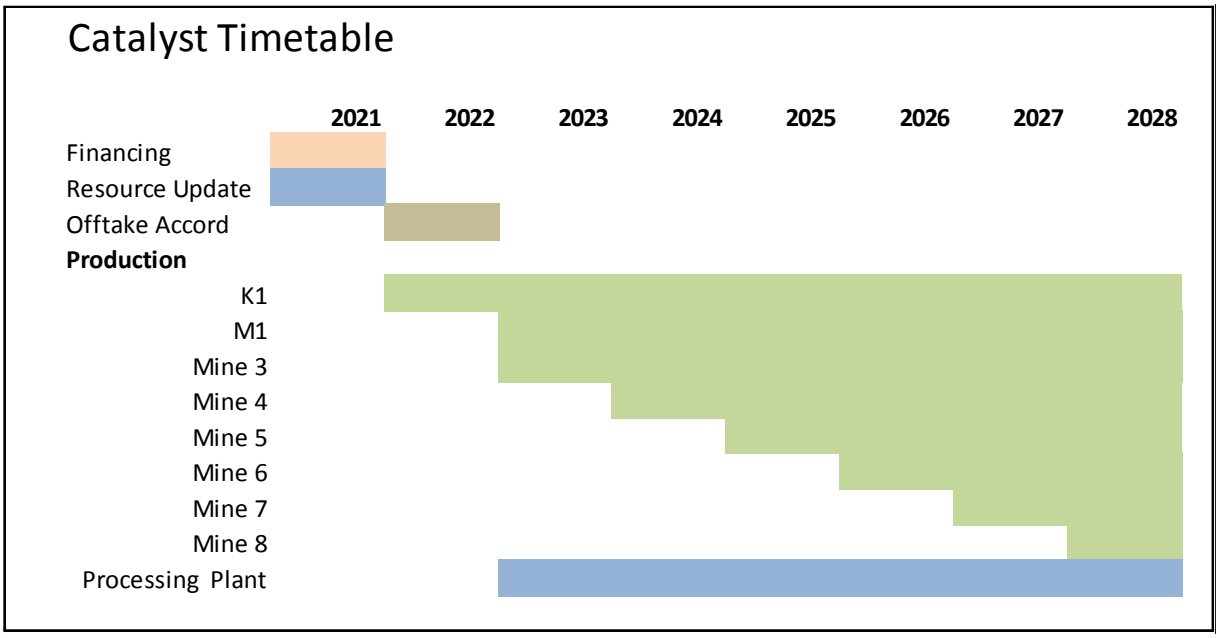
The product would be shipped to end-users or processors in container loads at a transport cost of around US$1,200 per unit.

M1 – Next Cab off the Rank

The Malsiripura project (abbreviated to M1) is located at about 120 km NE of Colombo, the capital of Sri Lanka. Within 30 kilometres of the licence area, are the larger regional centres of Kurunegala and Dambulla. The smaller village of Melsiripura, located some 15 kilometres south from the mining property, acts as a support base. CYL picked up the property in mid-2018.

Timeline

There is a busy year ahead for CYL with the onset of new production, a resource update, a potential offtake agreement with a major OEM, financing of the processing plant and its implementation. In the following table, one can see a timetable of catalysts for a re-rating of the stock, the primary catalyst would be an offtake agreement with a major car or EV battery manufacturer.



The Economics

CYL has a FY ending in March. The company's latest results (three months to June 2021) represented its first full quarter following restart with pilot production of 29k tonnes of natural graphite produced during the quarter.

It is clear that the company benefits from economies of scale so ramping up to full production (which is estimates gives a C1 cash cost of only $330/t) has to be the goal. In doing this the middle tier of graphite wannabes are going to be put in the shade for several years to come.

Earnings Outlook

Compared to our previous projections, the current model includes a firmer timetable for adding new mines and moreover quantifies the effect of adding value-added processing.

Below we summarize our revised cash flow model, factoring in the higher-priced, value-added product, which includes developing a US$55.8mn (US$22.3mn attributable to CYL) processing facility to upgrade the graphite to battery-grade quality. The cash flow model assumes a 100% interest in Ceylon's ten mines.

CEYLON GRAPHITE

Sri Lanka Mines (100%)

FY ending March

	2022	2023	2024	2025	2026	2027	2028
Production (tonnes)							
K1	2,000	2,500	3,000	3,500	3,850	4,235	4,659
M1		1,500	3,000	3,500	3,850	4,235	4,659
Mine 3		1,000	2,000	3,000	3,300	3,630	3,993
Mine 4			1,000	2,000	2,200	2,420	2,662
Mine 5				1,500	1,650	1,815	1,997
Mine 6					1,500	1,650	1,815
Mine 7						1,500	1,650
Mine 8							1,500
Total Production (tonnes)	2,000	5,000	9,000	13,500	16,350	19,485	22,934
Revenue per tonne	1,800	1,800	8,800	9,000	9,200	9,400	9,500
Revenues	**$3,600,000**	**$9,000,000**	**$79,200,000**	**$121,500,000**	**$150,420,000**	**$183,159,000**	**$217,868,250**
Royalties	-$432,000	-$1,080,000	-$9,504,000	-$14,580,000	-$18,050,400	-$21,979,080	-$26,144,190
Net Revenue	**$3,168,000**	**$7,920,000**	**$69,696,000**	**$106,920,000**	**$132,369,600**	**$161,179,920**	**$191,724,060**
Processing cost per tonne	0	0	1,300	1,430	1,573	1,730	1,903
Cost per tonne	284	312	344	378	416	457	503
Operating cost	**-$568,000**	**-$1,562,000**	**-$14,792,760**	**-$24,408,054**	**-$32,516,952**	**-$42,627,039**	**-$55,188,397**
G&A	-$1,690,875	-$1,520,000	-$2,500,000	-$2,750,000	-$3,025,000	-$3,327,500	-$3,660,250
Net Profit	**$909,125**	**$4,838,000**	**$52,403,240**	**$79,761,946**	**$96,827,648**	**$115,225,381**	**$132,875,413**
Taxes	-$254,555	-$1,354,640	-$14,672,907	-$22,333,345	-$27,111,741	-$32,263,107	-$37,205,116
Operating cash flows	**$654,570**	**$3,483,360**	**$37,730,333**	**$57,428,601**	**$69,715,907**	**$82,962,274**	**$95,670,297**
Sustaining capital	$100,000	$400,000	$1,200,000	$2,650,000	$4,355,000	$5,470,500	$6,017,550
Development capital	$1,200,000	$3,200,000	$55,800,000	$6,820,000	$4,462,000	$2,188,200	$2,407,020
Free cash flows	**-$645,430**	**-$116,640**	**-$19,269,667**	**$47,958,601**	**$60,898,907**	**$75,303,574**	**$87,245,727**

We premise the addition of new mines on a relatively conservative basis, though the company feels that after the first two opening it can bring on more mines faster than we posit here. Each of CYL's mines is expected to cost only US$2M to bring into production at a rate of 5,000 tpy.

Therefore, we are operating under the scenario on M1 being operational in calendar year 2022, M1 and another mine would be added in the following year and then adding one extra mine per annum. In addition to augmenting the mine numbers were are working on the premise that the volumes of graphite from each mine will also increment per annum. This produces a doubly compounding effect on revenues.

Over and beyond this we are factoring in a shift from sale of just a concentrate in 2022 and 2023 to sales of the strongly value-added battery-grade graphite project in 2024 after the aforementioned expenditure on the processing facility. If either the onset of production from new mines and/or the processing facility are accelerated then the revenues will be higher earlier on. We are using $8,800 (trending up to $9,500/t by 2028) per tonne for the battery grade output whereas the company's management believes that they may achieve as high as $10,000 per tonne.

As is evident from even our conservative model the revenues escalate exponentially from the third year of our model. Indeed net profits by 2024 could exceed the market capitalization of the company. The potential for the company to throw off dividends by this point is a strong possibility.

Likely Evolution of the Share Structure

It is useful to look at the way the share structure might evolve in the short term.

		Strike	Exercise Date	Funds raised if exercised
Shares on issue	122,994,747			
Options	350,000	$0.20	15-Mar-22	$70,000
	200,000	$0.20	27-Mar-22	$40,000
	1,650,000	$0.30	15-Feb-23	$495,000
	507,870	$0.20	31-Aug-23	$101,574
	300,000	$0.20	15-May-24	$60,000
	5,000,000	$0.22	19-Nov-25	$1,100,000
	8,007,870			$1,866,574
Warrants	4,000,000	$0.25	23-Nov-21	$1,000,000
	10,000,000	$0.15	16-Oct-21	$1,500,000
	1,800,000	$0.15	4-Dec-21	$270,000
	15,800,000			$2,770,000
Fully Diluted	146,802,617			

The company currently has 123mn shares outstanding with 16mn warrants between CAD$0.15 and CAD$0.25 per share coming due by the end of this year, which could bring in CAD$2.8mn in funding. However, unless the price rallies strongly in coming weeks, it is unlikely the bulk of the October warrants will be exercised.

We assume the company would raise an additional CAD$5mn at the minimum warrant exercise price of CAD$0.15 per share, which should be all the company needs before being able to be self-funding out of internally generated free cash flows.

Adding the additional options and assumed warrants associated with the CAD$5mn financing bring our total estimated future shares outstanding to 253.7mn.

Directors & Management

Don Baxter, Chief Executive Officer and a director, is a leading graphite expert, having built one of only two producing graphite mines in North America. He is presently CEO of Applied Graphite Technologies. Prior to this, he served as President, CEO and Executive Director of Alabama Graphite (a company we covered at that time), completing the company's Preliminary Economic Assessment (PEA) and introducing a new, battery-focused strategy. As President and Chief Operating Officer of Focus Graphite, he updated the company's PEA then completing a Feasibility Study. He was also responsible for advancing Focus's effort in the development of coated spherical purified graphite for the Lithium-ion battery sector.

He also served as President of Northern Graphite (another company we have covered) and was responsible for the technical aspects relating to the Bissett Creek graphite project, including the company's Feasibility Study, metallurgical test work, environmental and mine permitting. He also served as Mine Superintendent at the Kearney Graphite Mine and was Director of Mining at Ontario Graphite Ltd.

Jody Lenihan, a non-executive director**,** is one of the founding shareholders of Ceylon Graphite, and was Co-Founder and Chief Executive Officer of South Asia Energy Management Systems, formerly Sri Lanka's largest independent hydropower producer. With Sprott Asset Management as its largest shareholder, SAEMS was involved in the development, construction, and operation of run-of-river hydropower facilities in Sri Lanka and Uganda including eleven projects totaling 40MW in Sri Lanka,

Kevin Aylward, a non-executive director, has extensive public/private sector management experience in the resource and transportation sectors. Most recently he has worked in the oil sands industry and with First Nations groups on business development and environmental technology issues. Previously, he served as CEO of the Goose Bay International Airport and Nunacor Development Corporation. He also served as a Provincial Cabinet Minister for nine years with the Government of Newfoundland and Labrador including the Environment, Labour and Forestry portfolios. He served as Leader of the Liberal Party of Newfoundland and Labrador during the provincial elections in 2011.

Brett James, a non-executive director, has been a partner and principal of Sussex Strategy Group since 2000. Brett provides clients with strategic counsel on major business issues, informed and intelligent guidance on their government interaction and communications advice to leverage public opinion on issues affected by government decisions. He has been a political and communications commentator on several major Canadian media outlets and a guest speaker at many major business, communications and advocacy conferences in Canada and the United States.

Rodney Stevens, Vice President, Corporate Development, is a Chartered Financial Analyst with over a decade of experience in the capital markets, first as an investment analyst with Salman Partners Inc. and subsequently as a merchant and investment banker and portfolio manager. Over his career, he has assisted in financings and M&A activities worth over $1bn in transaction value.

Abbey Abdiye, CFO, has extensive experience in the financial sector, in both public and private companies. He is a chartered professional accountant (CPA), and current chief financial officer of reporting issuers, where he is responsible for all financial, fiscal management, regulatory compliance matters and reporting aspects of company operations. He also provides strategic guidance and direction in capital structuring and is engaged in innovative financing programs that leverage sales and development.

Dr. Siva Bohm, Chief Scientific Executive, is a renowned nanomaterials scientist with decades of multi-industry experience. He served as the graphene experts in ArcelorMittal, CTO in Talga, and Principal Scientist in Tata Steel. Siva has been a Royal Society industry fellow from 2017 affiliated initially with Cambridge Graphene Centre and later with Imperial College. He is also a fellow of Royal Society of Chemistry, Faraday Council member, and Fellow of Technical surface Coatings. During his career, he has co-invented 35 patents, authored 95 scientific publications and is responsible for implementing ten commercial products. He has chemical engineering degree in Germany and has a PhD from University of Bath, UK.

Dr. Mallika Bohm, Technical Director, holds a PhD in Physics from University College, London. She has been a project leader for Tata Steel in anti-corrosion technologies as well as in the advancement of new products for galvanised wires and processes for motor tire bead wire. She has also been a Technical Director at Talga Technologies in the area of use of graphene in coating, composite, construction materials and energy.

Risks

It is important to highlight general and specific risks which, in the case of Ceylon Graphite, we perceive as being:

- Graphite price weakness
- Financing difficulties
- Country risk in Sri Lanka
- Excessive supply from too many projects coming online mid-term

Price weakness is less a case of potential demand faltering (which is highly unlikely) but rather of some sort of malevolent price-spoiling action emanating from China or the likes of a resurgent Syrah flooding the market. If it did it would be self-harming for either of them. Though China (and Syrah) have no say over the vein graphite space. It is worth noting that vein graphite sells for much higher than flake at $2000/t at a minimum.

Financing is a perennial issue in mining markets but with a mine in Sri Lanka up and running (and on minimal capex) the company would be moving into that sweet spot where it does not have sizeable financing needs *per se* but has the luxury, as a producer, of being able to expand from cash flows or funding from off-takers that now realise that the company is "real".

Exotic locations like Sri Lanka come with their tribulations, but the civil war in the country is now retreating further into the past. Also left behind are the strange nationalist/socialist economic policies that ruled for decades after independence. The lessons have been learnt that these did not help the mining sector in particular.

As noted many of the remaining graphite projects won't be going anywhere due to excessive capex numbers attached to their aspirations. Syrah is the only "big" producer to come to market with the other likely entrants being non-disruptive smaller capex developers. Thus Ceylon Graphite is likely to be part of a small band of producers, rather than trampled in a rush of bigger players.

Conclusion

The Battery Metals "booms" of the past 12 years have been mere passing squalls compared to the typhoon now descended upon the space. In the latest instance the enthusiasms are actually backed by a tailwind of real EV demand and real construction of Lithium Ion battery plants in the West. To mix a metaphor the "rubber has met the road", finally.

As Don Baxter, the new CEO often states, there is a lot of graphite in the world, but not enough processed graphite for lithium ion batteries, which is all coming from China at the moment.

Graphite prices have been relatively becalmed on the rising swell of battery metals. However, a review of the prices of graphite plays shows that the largely took off between December and February of 2020/21, with tripling not being uncommon, despite that graphite price not being as rip-roaring as the word "boom" might imply. As one of the few producers, Ceylon Graphite enjoyed the same type of surge, but like many others has faded, however this shows a lack of discrimination amongst the investors as to which companies are real and which are not.

The "changing of the guard" in management through mid-2021 has not stopped the progress towards adding new mines but has slowed it as the new team looked to get on board a local partner, prioritize which mines to develop next and formulate a more specific downstream strategy. The deal with the

largest Sri Lankan conglomerate not only brought more financial resources on board but also underpins the commitment to production, rather than jawboning.

CYL is getting closer to being able to supply a much needed steady source of highly-priced battery-quality graphite to EV manufacturers in an environmentally-sustainable manner. The high price that battery-quality graphite fetches, combined with the low operating costs, provides for 70% operating margins after royalties. The key catalysts are as follows: a) resource update, b) financing to grow production out of free cash flows c) an offtake agreement with a major OEM d) financing and developing a processing facility, e) supply battery-grade graphite, increasing its graphite selling price from US$1,800/t to over US$8,000/t.

Once financed and able to grow out of free cash flows, the company's cash flow per share has potential to grow to double digits. The stock is clearly undervalued on the prospects for earnings EVEN in the context of no- value-added processing. Add the processing and the company will be earnings each year a multiple of the current market capitalization.

We have added a **LONG** position to our Model Resources Portfolio and reiterate our **LONG** rating on Ceylon Graphite with a twelve-month target price of CAD$0.95 per share, which is an increase from CAD$0.76 previously.

Important disclosures

I, Christopher Ecclestone, hereby certify that the views expressed in this research report accurately reflect my personal views about the subject securities and issuers. I also certify that no part of my compensation was, is, or will be, directly or indirectly, related to the specific recommendations or view expressed in this research report.

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Hallgarten & Company has acted as a strategic consultant to Ceylon Graphite and has been compensated for those services in the past, but it does not hold any stock in the company, nor does it have the right to hold any stock in the future.

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