



THE CLOUDMINER LTD



Eagle Graphite : Undervalued yet ready to soar.

The Black Crystal Quarry as held by Eagle Graphite is one of the most advanced projects currently located in N. America and indeed globally. As a brownfields site it already benefits from existing infrastructure, plant, equipment and the capability of a quick restart.

Yet it has to be one of the most undervalued graphite plays available trading comparable to exploration stage projects. When I first came across Eagle it left me intrigued to dig deeper into the story to see where the value lay and why it had not been unlocked.

Alas the old cliché of “Grade is King” seemed to haunt this project but as savvy graphite investors should know this is only part of the story and Black Crystal has a whole lot more to offer as the company closes out their financing ready to kick start the project.

At a time when graphite seems as critical as ever to the right industry players, first in and best dressed is what will help Eagle to break the N. American market. As with any business a clear path to revenues is what can define success and with off take partners in place Eagle would appear ready to soar.



Authors:
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Daniel Bloor & Will Coverdale



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BLACK CRYSTAL QUARRY



Figure 1: Black Crystal Location Map

Located in British Columbia, Canada and straddling the U.S. border, the 100% owned Black Crystal Quarry is the closest source of flake graphite to Reno and the infamous Giga factory. With only 955 miles separating the two while positioned along existing infrastructure the former quarry which remains fully permitted to mine would seem perfectly placed to meet current demand, while remaining strategic to the rest of the N. American market and its growing demand. Eagle therefore would appear to have one of the most advanced strategic projects globally

and one of only two operation ready assets in N. America (Figure 2).

Yet the company has faltered and the value remains unlocked following an initial capital raise, a TSX-V listing and a first attempt of production which has left Eagle Graphite (EGA) at odds with their pre purchase partner of choice; a prominent N. American refractory. Since the listing in January 2015 and the failed restart, EGA have quietly gone about their business redefining the business model, expanding the team and the resources, improving their market knowledge and gathering support for what is about to be a busy year at the company.

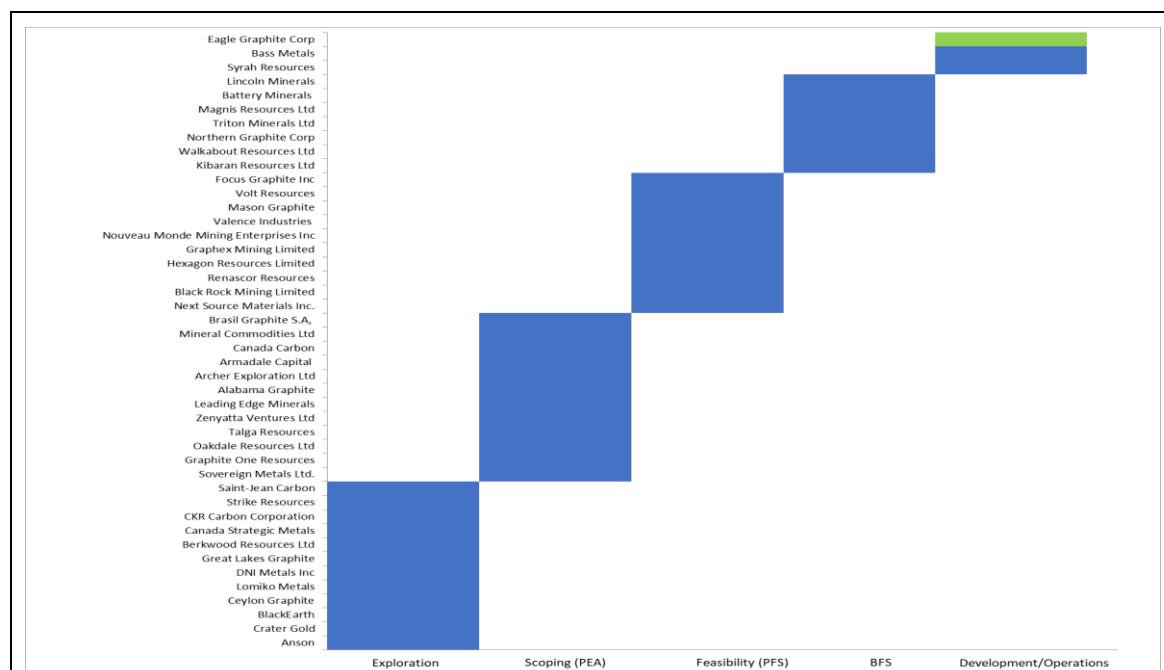


Figure 2: Current Graphite Players by Stage



A quick glance at their corporate presentation confirms the stage and status of the company as being a production ready asset. The current resource which has just been released has seen the size more than double from the 2014 release, as of May 2018 the resource stands at 43.15Mt at the lowly grade of 1.32% contained graphite. A far cry lower than their illustrious international peers (Figure 3) but within reach of most of their N. American peers (Figure 4). It is this number and ranking that first catches the eye – such a low in-situ grade. However it is the geology and the upgrading of the ore that helps set Black Crystal apart, with those in the know only too well aware that in graphite grade is not always king.

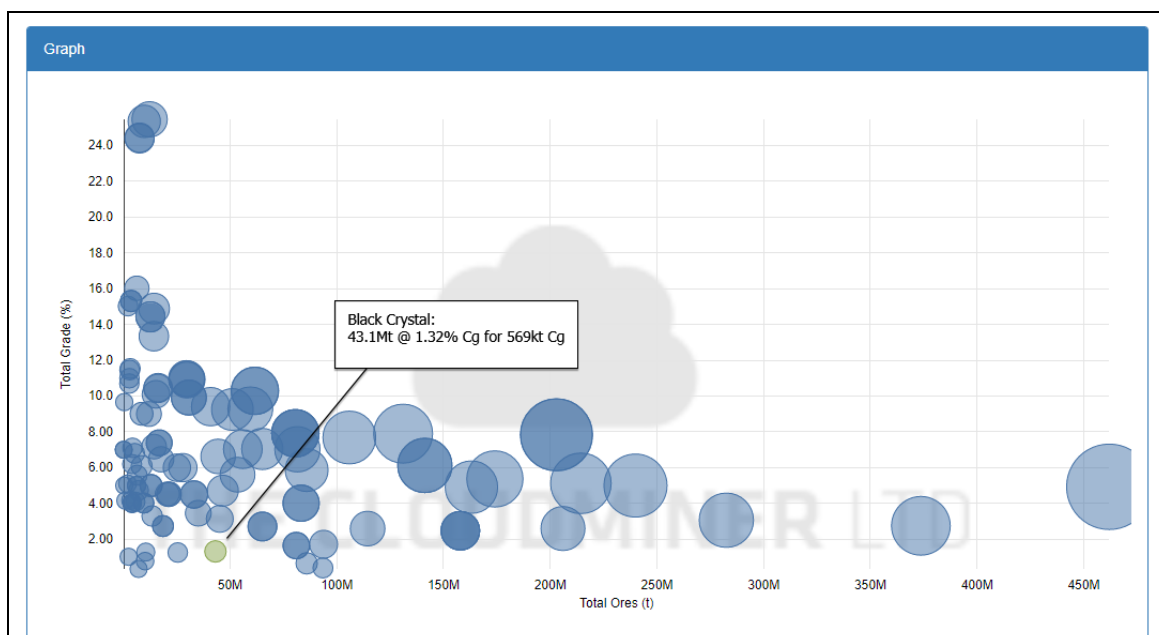


Figure 3: Global Graphite Resources

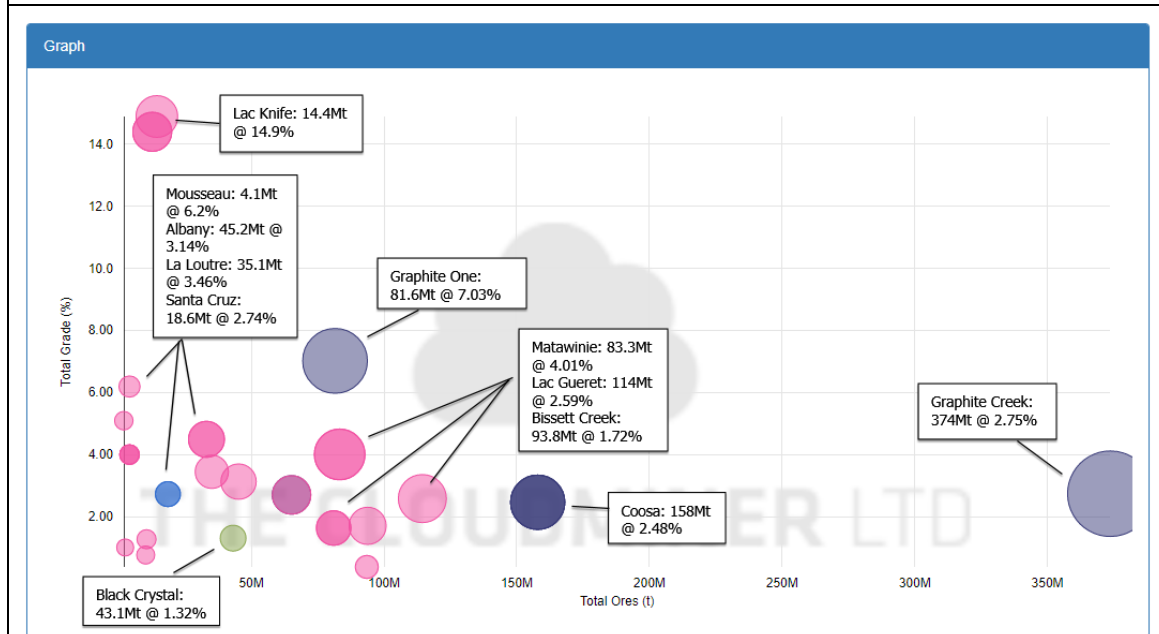


Figure 4: Graphite Deposits Located in North America



Black Crystal for all intents and purposes is a graphitic sand. Derived from schist, which due to its foliation, quickly weathers into flaky sheets and sand sized rubble consisting of mica, quartz and graphite, Figure 5. A sand which can easily be collected or “mined”, separated and sorted so while the grade is only 1.32% the cost to collect and sort this ore pre sending to the mill starts to set EGA apart. A head grade of 15%- 30% can be and has been achieved from simple sorting methods similar to those seen in the spodumene lithium space and just as similarly quartz sand is the by product.



Figure 5: Graphitic Sands located on site at the Black Crystal Quarry pre and post separation

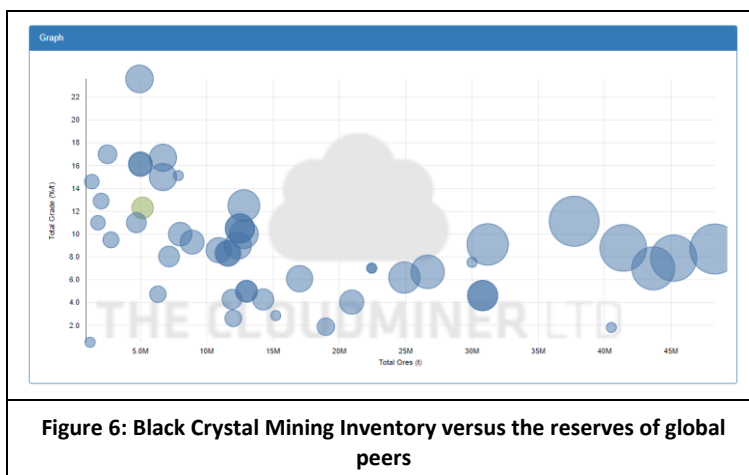
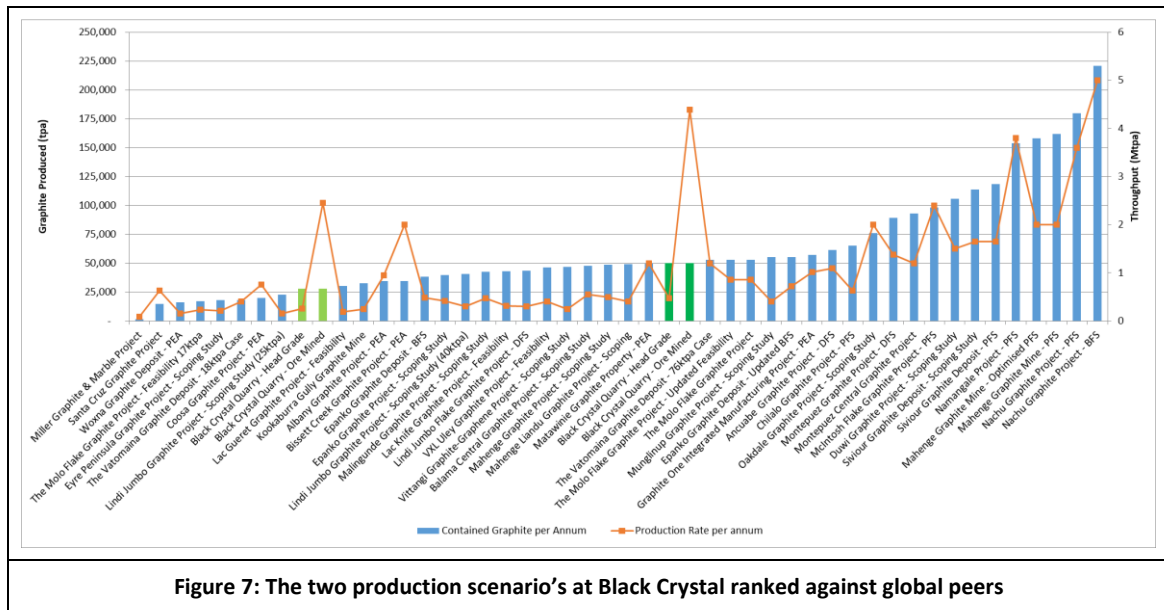


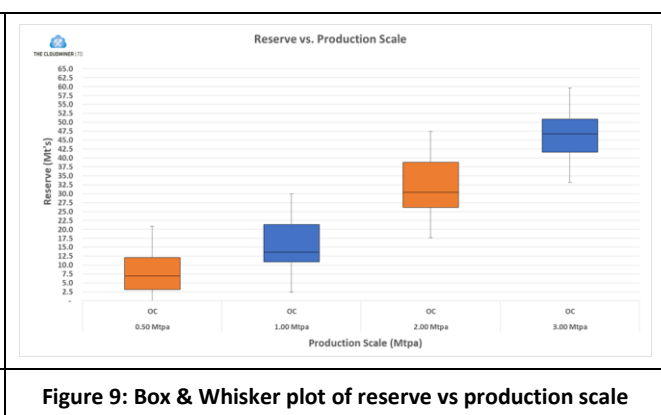
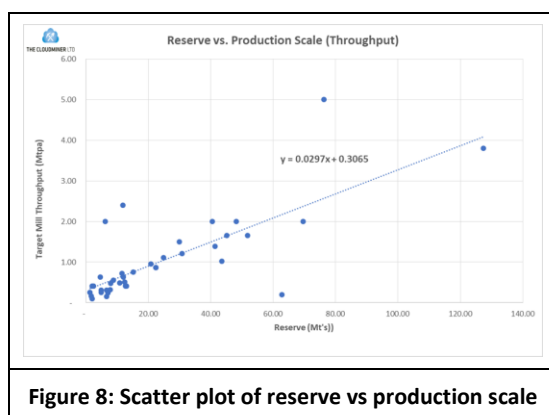
Figure 6: Black Crystal Mining Inventory versus the reserves of global peers

A conservative head grade therefore of 12% for ROM feed would rank Black Crystal above the majority of their global peers (Figure 6). However the one downside of any such method becomes the sand by product. The initial grade of 1.32% graphite still requires the movement of a lot of dirt to produce the desired 28,000 tpa of flake graphite initially and a potential 50,000 tpa down the line would EGA needing to mine firstly 2.5mtpa of sand and potentially up to 4.5Mtpa to produce the desired product (Figure 7).

While the amount of contained graphite product produce is in line with their peers the volume of ore to create these volumes sets them well above their peers on the amount of ore mined per annum. For comparison next to each peak the amount of mill feed is also displayed proving the majority of the ore is separated pre milling and ready as a by-product. EGA have made inroads into off take contracts for the sands which are produced as a by-product adding additional revenues alongside the graphite while the remainder can be used on site as part of the reclamation.



To assist with the benchmarking The CloudMiner (TCM) have evaluated all existing studies that are publically available in the graphite space which as mentioned previously is held by around 45 companies globally. Figure 8 and Figure 9 below explore the relationship between the scale of production and the reserve size which follows a very linear trend. As discussed above the planned production of saleable product is not unreasonable based on their peers and for 28,000 tpa a production rate of 2.5Mtpa would require EGA to have an in-situ reserve of around 30Mt. Given the current resource accounts for less than 3% of the property and the graphite bearing schists are well understood geologically such a reserve does not seem unlikely.



Such a production rate would yield an operating cost of around US\$20-30/t based on the peer analysis as seen in Figure 10 and Figure 11. EGA estimates that the operating costs per tonne will indeed fall within this range and most likely towards the lower end based on the softer material that requires mining, the reduced amount of material required to go through the mill post the initial separation and the availability of existing infrastructure and preferential energy cost offered by the state of British Columbia.

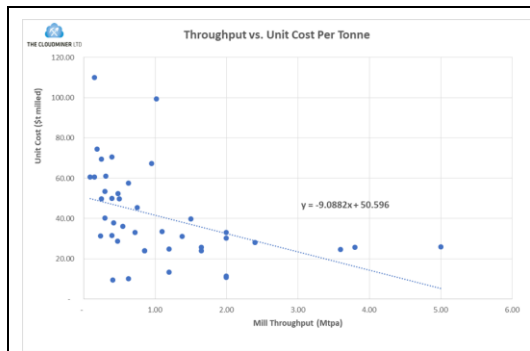


Figure 10: Scatter Plot of throughput vs Unit Cost

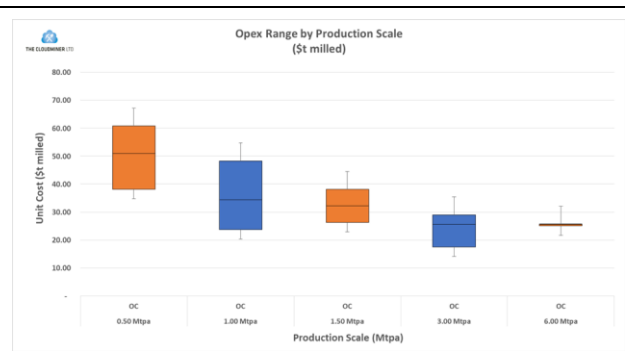


Figure 11: Box & Whisker Plot of throughput vs Unit Cost

The peer analysis for Capital Expenditure at this scale puts the amount of pre-production expenditure required in the order of \$80-110M, even for smaller scale productions the range would still most likely be between \$30-75M (Figure 12 and Figure 13). However it is here that EGA really holds an advantage over their peers. With existing infrastructure, a plant and some equipment the amount of new purchases and working capital required to initiate mining at Black Crystal this year is more in the range of US\$5-10M with further capital required to ramp the projects production scale to full capacity although this still thought to be under the \$20M mark, where most of the peers start.

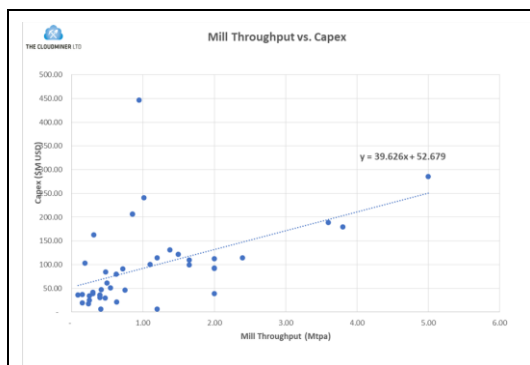


Figure 12: Scatter Plot of throughput vs Capex

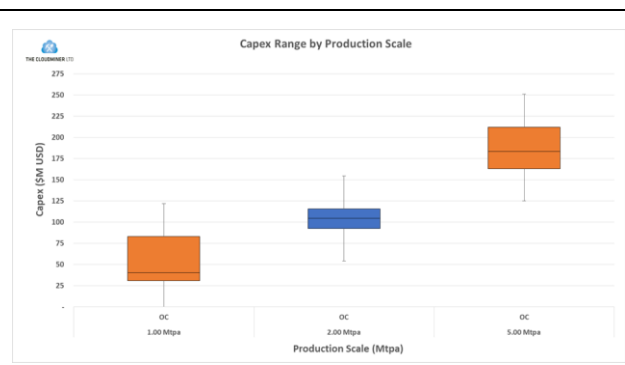
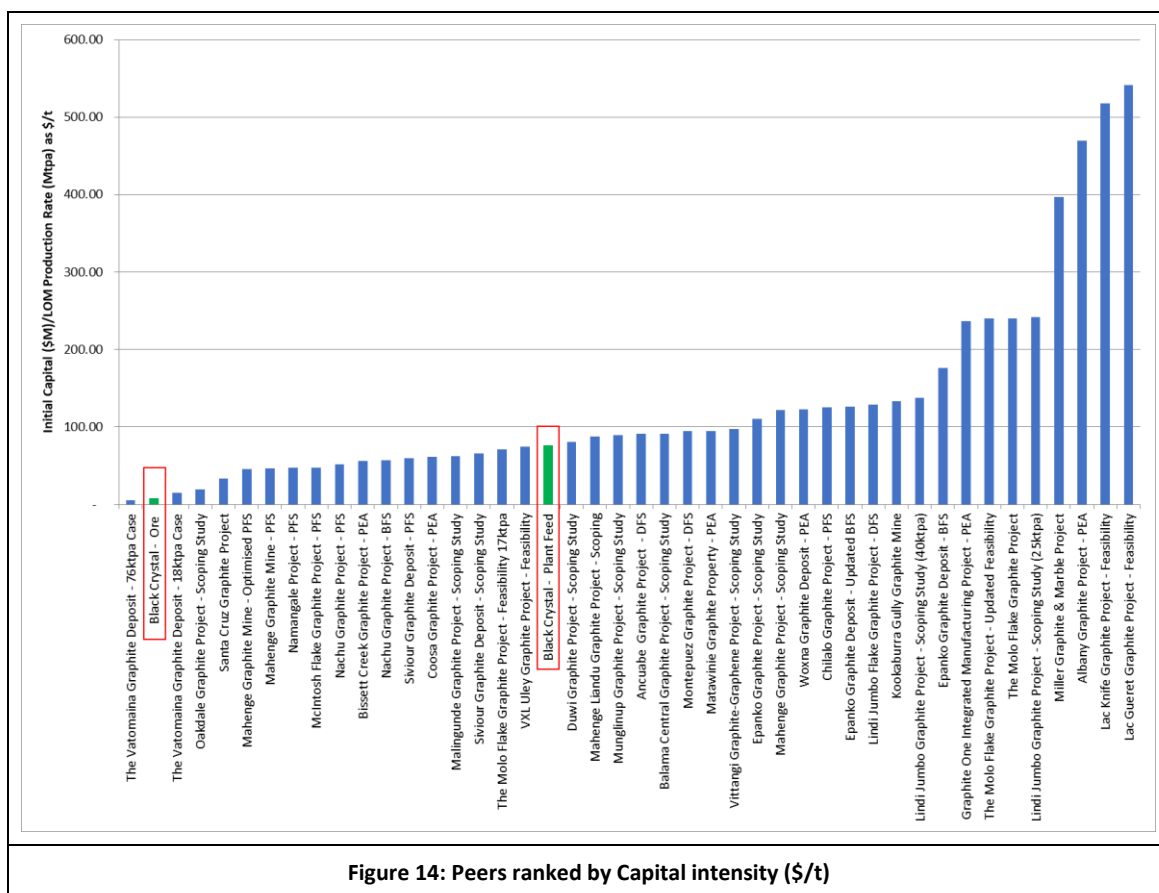
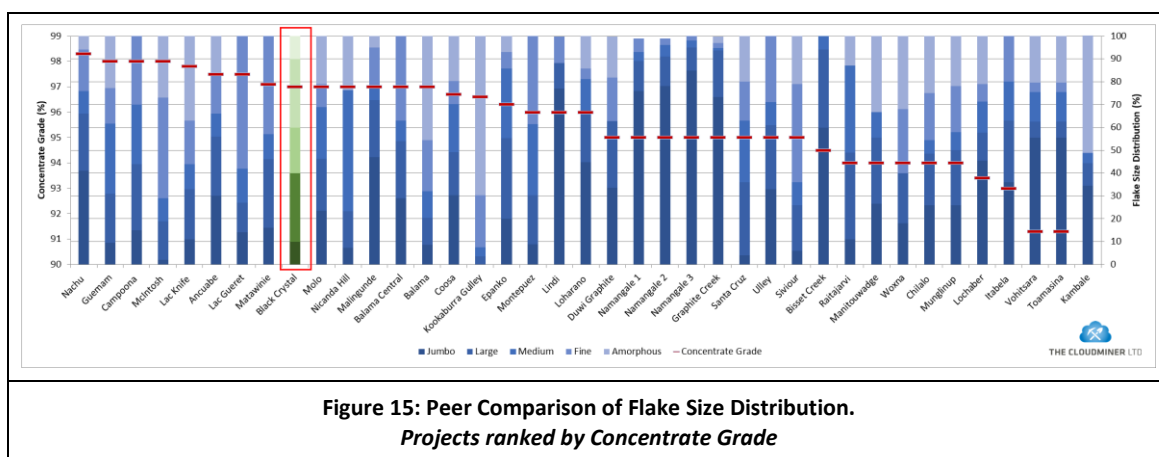


Figure 13: Box & whisker plot of throughput vs Capex

Assuming a capital expenditure of circa US\$20M was required to bring Black Crystal into full production of 28,000 tpa of graphite product the capital intensity would be around US\$8/t or ore. Second only to a much larger production project which also happens to be a brownfield site, Figure 14. Even based only on the feed material Black Crystal would still be lower half of the table and again this capital is based on what it would take to get into full production and not solely into production alone.



As was mentioned earlier in this report when it comes to graphite grade is not always king. Graphite is an extremely complex commodity which can be broken down into many different products and as such revenue streams. The most commonly talked about is the flake size and flakesize distribution followed by the concentrate grades being produced. Large and jumbo sized flakes are seen as the preferred size for the speciality hi tech markets such as the materials used in lithium ion batteries and as such demand a premium price over lesser products. A peer analysis of the flakesize distribution is displayed in Figure 15 below which is ranked by the concentrate grade produced.





The concentrate grade produced is important to note as it is the last step pre upgrading for specialist markets where the impurities start to play a much more prominent role. As graphite is a hi tech mineral it relies heavily on its conductivity and its ability to dissipate heat. Even the slightest of impurity much like in metallurgical grade silica can render the product useless. Anode graphite for example requires 99.99% pure graphite with the cost to produce such a product adding to the operating costs and subtracting from the margins. Therefore the better the concentrate grade produced at the first stage the more economic it would be to produce the premium products.

The graphite produced at Black Crystal has already undergone rigorous testing and following on from the run of plant grade which nestles between 94-99% in purity it has shown favourable characteristics for Li-ion batteries. Of the products tested from Black Crystal a purity of 99.995% was achieved against the specification which was only 99.5%. In hi tech a considerable difference on the positive side. This is no better demonstrated by the industry partner that entered the pre purchase contract with EGA and despite all the setbacks still remains a willing customer. Testament to both the quality of the product and the demand in the Market.



Due to these multiple streams of product; multiple pricings are attributed to each and a weighted average or basket price is reported to assist in comparing products. An analysis of all economic and feasibility reports over the last few years showed a steady rise initially which has somewhat cooled through 2017 and 2018 but remains around the US\$1000/t mark for the first pass product specs as shown in Figure 15. More speciality products as described above demand a premium and as the whiskers show on Figure 16 this can fall way above the basket price. Unfortunately these prices are seldom reported as they are tightly held in contracts between the suppliers and the purchaser however Benchmark Minerals are one of the few that attempt to track these prices with some success.



OPPORTUNITY & VALUE PROPOSITION

Eagle Graphite presents an interesting conundrum. The Black Crystal Quarry for all intents and purposes sits in a safe, first world mining jurisdiction. Is fully permitted and has existing infrastructure and plant equipment in place. The initial capital required to re start a simple operation is minimal and EGA has financing terms in place to do so (see press release dated 2017-07-10). They have also recently closed a private placement as interest in the story has started to gain momentum, however the market cap at the date of writing (27-09-2018) sits at US\$5.88M and the Enterprise Value at US\$4.41M having barely moved. An EV that is comparable with exploration stage companies (Figure 17).

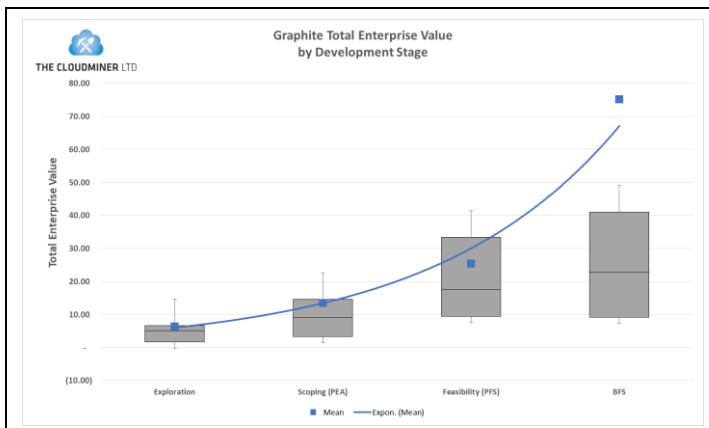


Figure 17: Box & Whisker Plot of Total EV \$M by Development Stage

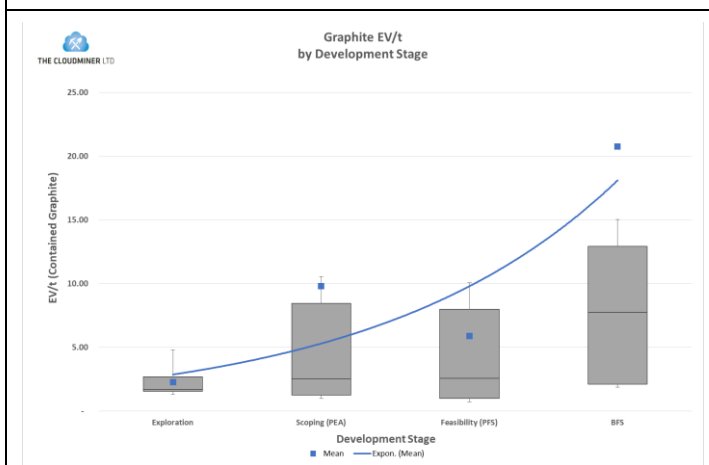


Figure 18: Box & Whisker Plot of EV \$/t by Development Stage

Whereas on a somewhat more traditional scale the EV/t of resource sees EGA rank in the upper half amongst its global peers based on the current resource, but in the lower half when placed beside N. American competitors. This is somewhat misleading however as any resource

upgrade that would raise the tonnes and therefore the contained graphite regardless of the in-situ grade would see the EV/t score move quickly to the left amongst the peers as it has done off the back of the most recent release. While the Black Crystal Deposit remains open along strike and at depth, the near term value lift at EGA would be to see Black Crystal re start production and the partnership with the N. American refractory finally realised.

With all the pieces of the puzzle seemingly in place 2019 is shaping up to be a company defining year for EGA as they look to do precisely this, produce revenue, prove the market does indeed want and need their product and hopefully as a result Eagle will finally soar.

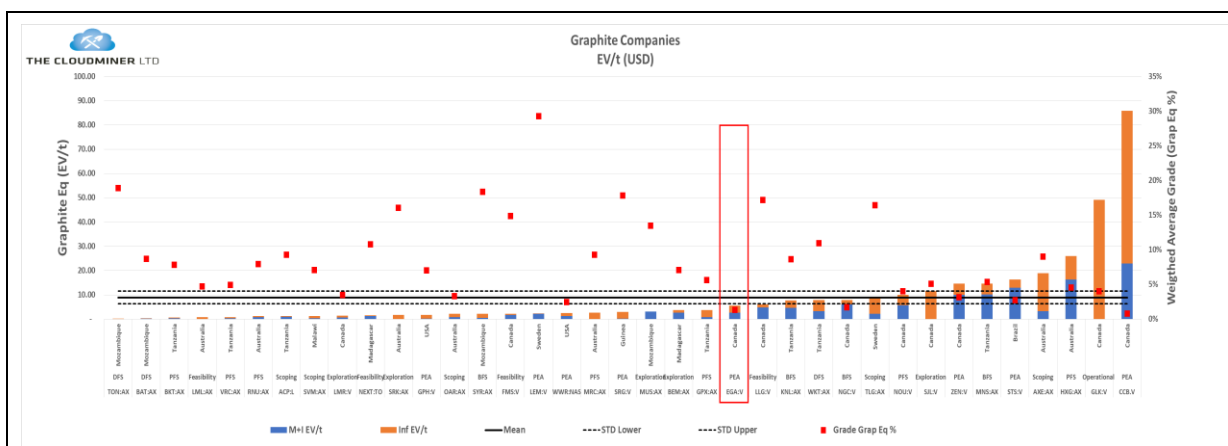


Figure 19: EV/t Analysis of Global Graphite Companies

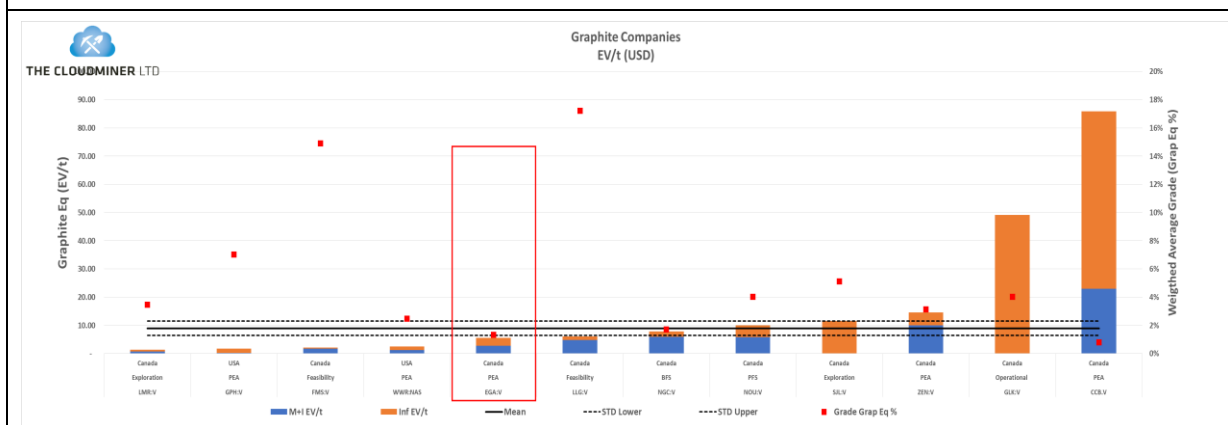


Figure 20: EV/t Analysis of N. American Graphite Companies



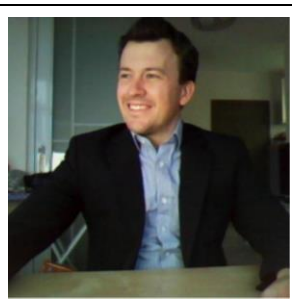
ANNEXURE A – QUALIFICATIONS AND EXPERIENCE



Daniel Bloor: BSc (Geology), MSc (Applied Geosciences)
Senior Geologist

Daniel has over a decade of experience in the mineral and engineering geology industry with a further three years in the UK financial industry. Having worked with multiple commodities as an exploration and production geologist Daniel moved to Hong Kong where he was a consulting resource geologist both for due diligence and independent technical assessments for investment purposes. Daniel Co-Founded the

CloudMiner Limited in 2012 and has spent the last five years evaluating and researching a wide spectrum of minerals projects around the globe.



Will Coverdale: BEng (Mining), MAusImm
Senior Mining Engineer

Will is a qualified Mining Engineer with a diverse range of experiences and specialties encompassing both underground and open cut mining across several commodities. This includes specific underground operational experience with the following methodologies; large sub-level caving operations (Cu & Au), board & pillar (coking coal), remnant mining

(Au) and cut & fill mining (Au). Technical experience also covers a number of other commodities including uranium, gold, iron ore and high-grade silica. Country specific mining experience includes Australia, Kazakhstan, Mongolia and the Philippines. Roles have varied from design work, modelling, mine planning and scheduling through to feasibility study management and operational management.



ANEXURE B –

Limitations and Exclusions

TCM's opinions contained herein are based on information held in the public domain, which in turn reflect various technical and economic conditions at the time of writing. This is an initial review of what is provided but in no way is to be classified as an in-depth due diligence report. As previously discussed these are typically carried out by a team of experienced professionals which would include reviewing the geology, block models, mine plans, schedule, metallurgy and cost assumptions from an independent view point.

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