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## Weighing up graphite's future

*By Daniel Gleeson*

**GRAPHITE is one of the lone hotspots in the exploration sector. A number of junior outfits have sprung up in recent years ready to take advantage of a supposed uptick in demand in the future, but what started off as a trickle of new market entrants has become a flood, which could potentially turn a future market deficit into a surplus.**

While demand was likely to increase in line with growing lithium ion battery production from hybrid and electric car manufacturers and increased environmental scrutiny on Chinese producers was likely to dent global output on the other side, it seemed unlikely all of the mooted production would find a home, according to a recent report from industry publication Industrial Minerals.

“There exists a growing window of opportunity for new flake graphite supply to enter the market, but given the extent of new discoveries, slated new production by 2020 appears to be well in excess of this opening,” Paterson Securities resource analyst Jason Chesters and CSA Global’s principal consultant Andrew Scogings and manager of resources Bill Shaw said in the report.

The authors highlighted the Tesla Gigafactory in Nevada in the US, which could produce 500,000 lithium-ion battery units annually by 2020 and in turn consume the equivalent of 120,000tpa of flake graphite.

There were also plans by the likes of LG, Samsung and Apple to invest in expanding battery capacity, while potential future demand for graphene, a value-added graphite-based product, was also worth consideration.

“While the [graphene] market is in its infancy and is unlikely to become a volume consumer of natural graphite, the value-added potential of the industry is considerable,” the authors said.

Still, should all of this graphite production come on stream as planned – a bit of a leap – an extra 1-1.5 million tonnes per annum of extra flake supply could enter the market by 2020, compared with the current 500,000-600,000tpa market.

“Accordingly, it seems likely that many projects will fail to reach production,” the report said.





As a result investors should tread carefully when backing a graphite play. Fortunately for those eyeing weighing up an investment, the authors had drawn up a crib sheet which could help the selection.

“A quantitative matrix of six key factors in ranking graphite plays in the current market includes: i) deposit size, contained graphite and enterprise value; ii) location (country risk) and logistics; iii) flake size distribution; iv) product purity; v) offtake agreements; and vi) timeframe to production,” they said.

Using said criteria the authors compared 21 companies with listings in Australia, Toronto and the UK, attributing a maximum score of 10 under each measure.

One of the more debated project factors under consideration was flake size distribution; an all-important factor considering the size dictated what industry producers could sell into. “Two facts that generally seem to be agreed are; first, the larger the flake in a deposit, the higher the purity of the graphite; and second, the larger the flake size, the higher the price, all else being equal,” the authors said.

In this respect, companies such as Kibaran Resources (Epanko), Magnis Resources (Nachu) and Toronto-listed Northern Graphite (Bissett Creek) were marked out as top performers under this category. The authors also gave Talga Resources credit for looking beyond the obvious and attempting to build a graphite-to-graphene demonstration plant in Germany for its Vittangi project in Sweden.

Product purity and the lengths to which companies were willing to go to secure a viable end-use market were also flagged up.

“It should be noted that graphite companies are increasingly considering moving further downstream and performing further product beneficiation themselves in order to differentiate their businesses to potential customers and achieve a higher price for the final product,” the authors said.

It named Archer Resources (Campoona/Wilclo South), Canada's Flinders Resources (Woxna), Syrah Resources (Balama) and Valence Industries (Uley) as companies carrying out such work. They might not have scored perfectly on the purity metric, but they were putting themselves in a position to succeed by spending money on such research.

Size was not necessarily all it was cracked up to be based on these results. Those biggest on paper, such as Triton's Nicanda Hill asset in Mozambique, or Mason Graphite's Lac Gueret project in Canada fell down on location (in Nicanda Hill's case) or offtake agreements (in Mason's case). In fact, the highest overall scorer – Valence, which scored 42 points out of 60 and recently started up operations at Uley – came second to last (joint) in the size stakes, going against the adage of bigger being better.





And considering the authors' reservations on the small window of opportunity for graphite producers, the companies scoring top marks on production timeframe – Valence, StratMin Global Resources (Loharano) and Flinders (Woxna) – all commanded high overall rankings (first, sixth and second, respectively).

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