

## The Graphite Market

Like most commodities, graphite prices continue to languish in the face of a strong US dollar, the slowdown in China and the lack of economic growth in the US/Europe/Japan, particularly as it relates to the steel industry. Prices are currently in the order of US\$1,150/t for standard large flake material. This is well above the lows experienced during the 1990-2005 period, but also well below the 2012 highs of US\$2,800/t. While Chinese production has declined for economic and environmental reasons, the decline has been more than offset by lower global steel demand. Low graphite prices are the reason for the disappointing share price performance of most graphite companies, including Northern.

## Potential Catalysts

There are three potential catalysts that could change the fortunes of Northern and the graphite industry in the short to medium term. The first would be an economic recovery in the west. We do not believe the economic cycle as we knew it is dead. A recovery will happen but the timing is obviously uncertain. The stimulus for a recovery is also not apparent as the reason usually becomes obvious to the experts after it happens. Low oil prices are one candidate.

The second potential catalyst is the lithium ion battery ("LiB") market becoming large enough to start driving graphite prices. It is very difficult to find anything growing at double digit rates in the current economic climate but LiBs are one of them despite the slow adoption of electric vehicles ("EVs"). China is essentially the only producer of spherical graphite ("SPG"), the anode material used in LiBs and manufactured from the downstream processing of flake graphite mine concentrates. Its SPG exports increased at a CAGR of 27% between 2009 and 2014. SPG now accounts for over 25% of the flake graphite market from almost nothing six years ago and it continues to grow rapidly.

This demand growth is largely from cell phones, cameras, laptops, power tools, motor scooters, etc. It has not led to higher prices because it has been more than offset by the decline in steel industry demand. If steel demand were to recover to near previous levels, it could create the perfect storm for graphite producers with supply shortages and prices potentially exceeding previous peaks.

Growth in the EV industry and grid storage could also create the same effect. It has been calculated that Tesla's annual sales target of 500,000 cars would require five or six new graphite mines. That is probably high but nonetheless, 500,000 cars is less than 1% of the annual new car market. EVs are not going to take over the new car market but it does not take much, a per cent or two is huge for the graphite industry. Most of the major car companies, not to mention Tesla, are pushing EVs and governments are very supportive of their adoption so it is a good bet that these sales levels will be achieved in the next couple years.

The third potential catalyst would be a strategic partner/offtake agreement or a decision in the Tesla "beauty contest". The gigafactory is under construction, is slated to be in operation late in 2016 and the clock is ticking on Tesla securing raw material supply agreements. Almost all natural SPG is currently manufactured in China which creates security of supply issues and environmental concerns. Nobody wants a green car with a dirty battery.

What Tesla wants is no secret. Low cost, near term supply, preferably North American, and mining and processing with a small environmental footprint. Tesla is all in with a very aggressive business plan and represents one catalyst that could stimulate the development of a new graphite mine in the very short term. What Tesla decides remains to be seen but Northern ticks all the boxes in terms of their requirements and might be the only graphite company that does.

## Strategic partnerships/offtake agreements and Endeavour Financial Process

Endeavour completed the first phase which involved contacting and providing an information package to traditional graphite buyers and users as well as companies in the lithium ion battery ("LiB") industry. This has resulted in the Company signing a number of confidentiality agreements and providing product samples to potential partners. The initial feedback has been very good with particular interest in SPG and XL flake/high purity products. The process is ongoing and no agreements have yet been signed. Graphite supply is plentiful in traditional markets, with some exceptions with XL and XXL flake, and there is no sense of urgency among buyers and manufacturers. The LiB market is changing rapidly, there are many graphite juniors making competing and contradictory claims, and the project/product evaluation process is lengthy. As a result, they have not made any major moves either.

An offtake/strategic partnership is the next step for Northern to obtain financing and start construction and has been for some time. The lack of one is obviously very frustrating for management and our shareholders. It may be small consolation, but we are not aware of any meaningful offtake agreements being signed by any of the major graphite buyers or users. This would be an agreement that enables a new project to obtain financing and get built.

## Competitive Position

Northern was the first new graphite company to complete a feasibility study and provide real numbers with respect to its project. Four other companies have now reached the same level and a number of others have released scoping type studies. We are very comfortable with how our project stacks up. The Bissett Creek Project is located close to infrastructure in a politically stable jurisdiction. A Feasibility Study has been completed and we have our major environmental permit, putting the Company in a position to be a near term producer.

Northern believes it is the only company that has demonstrated it has an economic project at current prices and at reasonable production levels that are unlikely to further depress prices. This is because Bissett Creek has by far the best flake size distribution and lowest unit operating costs, and a very reasonable capital cost. Most companies present their economics using a very optimistic view of current prices, or future forecasts.

## Marketing Risk

Whether or not a project is financeable is also a function of the risk that it will negatively affect prices or may not be able to consistently sell 100% of production. Most companies are modelling projects that will produce 40-50,000 tpy, or higher, because that is the only way the economics work. However, these production levels would increase annual supply by over 10% and negatively affect prices. Northern's economics work at current prices and an initial production rate of approximately 20,000 tpy. The Company has already drilled the resources that will enable us to expand well beyond this as the market grows.

In addition, the production of each grade must also be evaluated relative to its market size. Northern has the highest percentage of XL and XXL flake and there is a risk that the volumes would affect prices in these markets. However, this risk should be manageable as these are high value, high growth markets that are in better shape supply/demand wise. The Company also has the option of selling down into lower markets to move product although prices may not be attractive. Most projects will produce a high percentage of small flake and fines that must be sold into low value, low growth and often distant markets. For these reasons we believe Northern has the lowest marketing risk of any new project. This issue is a big concern for potential providers of financing even though most graphite companies ignore it.

## Product Quality

Unlike base or precious metals where everybody's products are the same, there is a wide variation in flake size, purity and other characteristics between graphite deposits. Companies usually claim their concentrates can be all things to every customer without fully disclosing who did the work and what the results were. Potential providers of mine financing will demand strong, third party corroboration that this is the case and the average investor should as well. Northern's flake concentrates have been vetted for all traditional markets by Naturgraphit GmbH, a very well respected lab in Europe, and our SPG has been tested by Dr. Ed Buiel who has extensive experience in the battery field and who received his Phd under Dr. Jeff Dahn, a leading LiB researcher, who has recently announced an R&D partnership with Tesla.

## Spherical Graphite Proprietary Technologies

When LiB companies ask for samples the only option most juniors have is to send their flake to China and get it processed. That may prove it works but it does not deal with security of supply, cost or environmental issues. Northern is already producing and providing commercial samples to potential customers and the results have been very good.

The Bissett Creek deposit provides natural competitive advantages in the LiB field. A very high percentage of production can be turned into anode material, the deposit is very consistent and uniform and therefore the product will be as well, and XRD analysis indicates that the flake has a highly ordered crystal structure. This makes it easier to purify and results in higher capacity batteries without expensive heat treatment. We have leveraged these natural advantages with proprietary purification and coating technologies that are an alternative to more costly, environmentally damaging methods.

Our goal is to provide a complete processing solution that results in the production of high quality, cost competitive SPG, and other products, with a small environmental footprint.

Current markets are very challenging for the Company, shareholders and investors. However, graphite has a big advantage over other commodities in that it has the benefit of new markets that are here today and growing rapidly. We remain very confident in the quality of the Bissett Creek Project and the future of the industry.

Additional information can be obtained at [www.sedar.com](http://www.sedar.com) and [www.northernrgraphite.com](http://www.northernrgraphite.com).

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