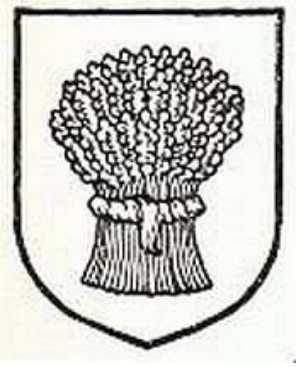
Monday, January 28, 2019



HALLGARTEN & COMPANY

Coverage Update

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Northern Graphite

(TSX-V:NGC, OTCBB: NGPHF, FSE:0NG)

Strategy: LONG

Key Metrics	
Price (CAD)	$0.18
12-Month Target Price (CAD)	$0.48
Upside to Target	167%
High-low (12 mth)	$0.14 - $0.50
Market Cap (CAD mn)	$11.7
Shares Outstanding (millions)	65.1
Fully-diluted O/s (millions)	75.6

Northern Graphite

Rightsizing for Take Off

- + An oven-ready graphite project in an accessible location
- + Minimal stripping with one of the lowest capexes for a greenfield development
- + Production will be almost entirely large/XL/XXL flake with no fines
- + Only other North American graphite mine near the end of its life and a replacement needed
- + Revision of PEA inputs in early 2018, using updated currency and price data, estimated an NPV of CAD$292.5mn (using an 8% discount rate) and pre-tax IRR of 30.3% at realistic current prices
- + Potential offtaker lined up
- + The all-important issue of infrastructure and access thereto is addressed by the company being well-situated in a well-serviced part of Ontario
- + Company has around CAD$2.4mn in cash in Treasury, low burn rate
- ✘ Small flake graphite prices are at the mercy of the Chinese
- ✘ The financing scene remains tough and Northern is at the point where it needs to get the project moving
- ✘ Syrah Resources has put a chill on other graphite projects until its future becomes clear

Graphite – the Second Flush

We feel quite comfortable in calling graphite the least hyped corner of the battery metal universe. The first flush of the graphite "boom" was in 2012 but was it really a boom? In comparison to Rare Earths and the more recent Lithium and Cobalt surges it scarcely rates. One of its problems was that the excitement was generated in the depth of the prolonged 2011-16 mining slump. It was a bright light on the horizon but was quickly extinguished by a sudden decline in the Chinese economy and the sheer lack of money in the market. Maybe 30 graphite plays arose out of the passing storm which, compared to the Lithium and Rare Earth booms, was not an excessive number. In reality, thirty was probably all the market needed to eventually produce maybe 10 survivors that move to production.

Location, Location and Location

The Three Ls of the property industry also hold good for the mining industry as a sorting device when one comes to comparing projects that ostensibly look the same and one wants to discriminate amongst them on the basis of their do-ability. Having the right location generally relates to jurisdiction, accessibility to workers/transport and infrastructure. If a project lacks any or all of these (and some do come up with three tomatoes) then costs and risk soar and the chances of success plummet.

Northern Graphite was the first graphite stock that came to our attention at the end of last decade

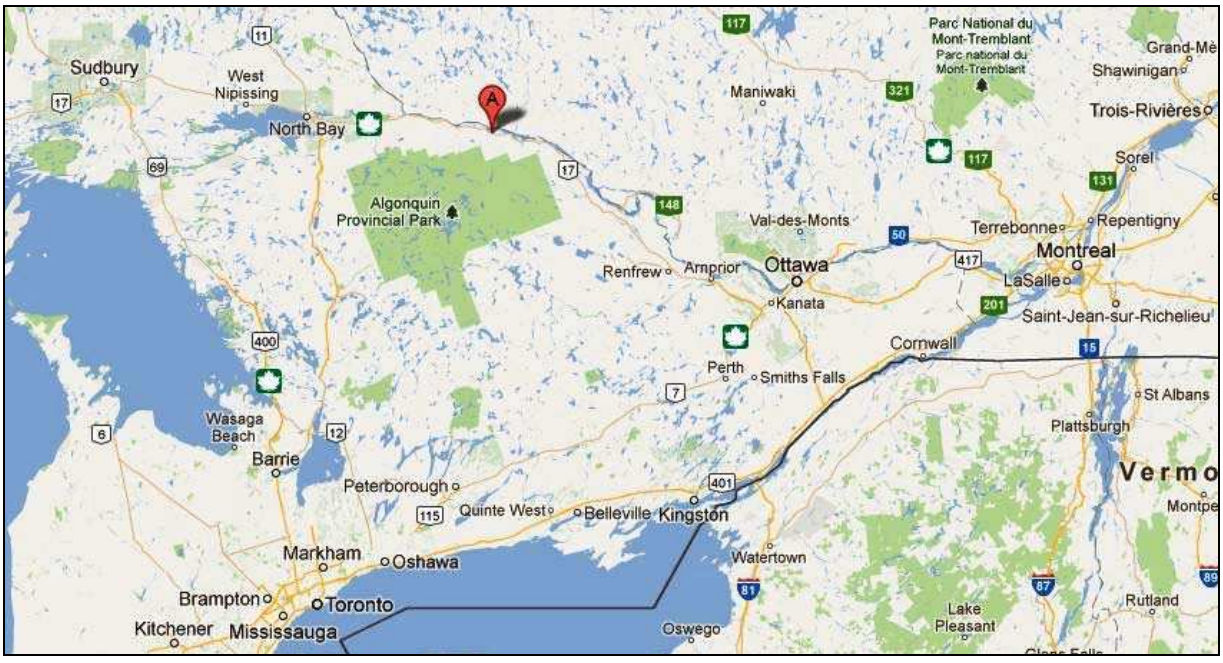
when the commodity had none of the sound and fury that it generated since. The company owns a 100% interest in the Bissett Creek large-flake graphite deposit, located in eastern Ontario.

Northern has been less one of the noise-makers" and more one of the doers as it ploughed through the various "report phases" in search of the ideal metrics for a rightsized graphite project. Amongst the new wave of projects it has the best infrastructure, realistic capital costs, the best flake size distribution and the lowest unit operating costs which more than offset it being a lower grade deposit.

Bissett Creek

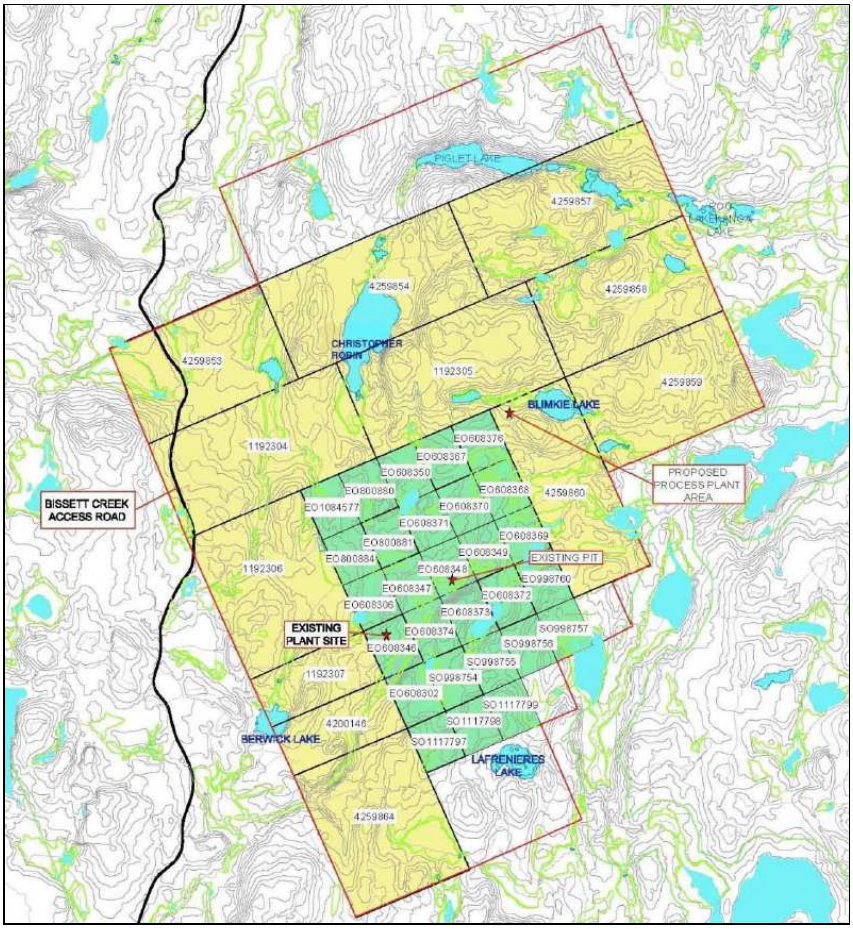
The Bissett Creek project consists of two mining leases covering approximately 2,500 ha located 15kms from the Trans-Canada Highway between the cities of Ottawa and North Bay, Ontario, Canada. The site is 130 kms from railway connections and only five hours by road from the port of Montreal.

Work on the deposit goes back several decades. The property was first staked in 1980 by Frank Tagliamonte and Associates. It subsequently changed hands in the 80s and 90s and eventually ended up with Northern Graphite. Timcal's Lac des Iles deposit, owned by the French group Imerys, is the only major producer in North America and a couple hundred kilometers to the east.



Extensive drilling programs and metallurgical work were conducted in the 1980s and from these an economic analysis was undertaken with the engineering firms, Kilborn, Cominco Engineering and KHD Humbolt Wedag putting out a full Feasibility Study on the project in 1989. It estimated a proven and probable reserve and concluded that the project was economic, but it was never developed due to a subsequent decline in graphite prices.

Late last decade Northern Graphite re-activated the project due to higher graphite prices and renewed interest in graphite projects. An additional 6,600m of drilling in 118 holes has been completed by NGC to bring the total drilling on the project to approximately 12,200m in 275 holes.



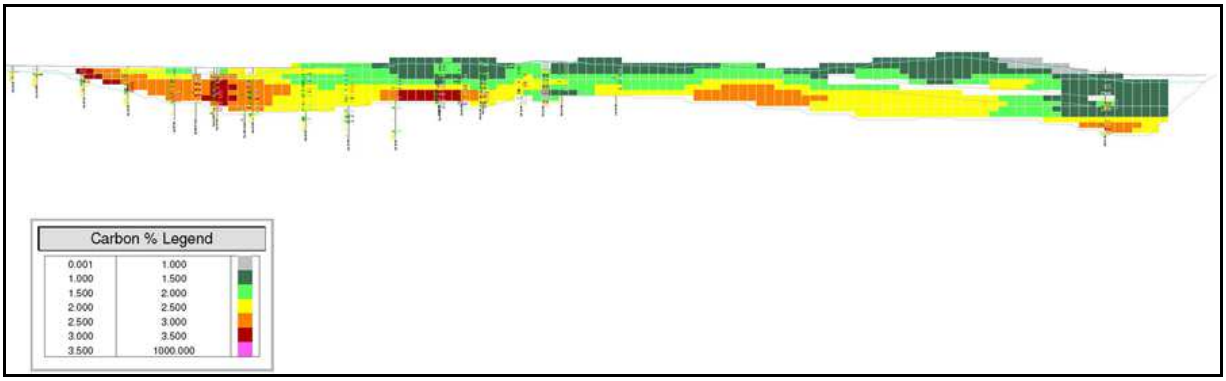
Geology

The Bissett Creek property lies within the Ontario segment of the Central Gneiss Belt of the Grenville Structural Province. Mapping of the area indicates that the Bissett Creek property and the surrounding area are underlain by Middle Precambrian meta-sediments. The host rock to the graphite is a medium to coarse-grained, grey, quartz-rich gneiss. The three main gneisses that are found on the property are the graphitic gneiss, the barren gneiss and the transitional graphitic gneiss. The Bissett Creek deposit is classified as disseminated flake graphite in silica-rich meta-sediments.

At Bissett Creek, the graphite seems to be associated with biotite. Sulphides appear in the graphitic gneiss but the sulphur content is very low, ranging between 0.8% and 1.86% and as a result 97% the tailings will be non-acid generating. The western edge of the graphitic gneiss is truncated by erosion. The eastern limit of graphite outcrop is determined by the overlying barren gneiss contact. The limits of graphitic gneiss exposure form an irregular area with a north-south length of 2.1 km; east-west

dimensions reach a maximum of 1.2 km. The graphitic gneiss exposure tapers dramatically toward the north and south before being lost through structural displacement or erosion.

The actual graphite deposit occurs at surface and covers an area of approximately 1.5 by 0.5 kilometres. There is minimal overburden and the maximum depth of the resource is about 80m.



Northern maintains that Bissett Creek is a unique deposit in that approximately 90% of the contained graphite will be categorized as large flake (and 60% XL flake), which are the highest ratios reported by any of the juniors.

Ore from the Bissett Creek deposit is not "hard" compared to many conventional mining operations and it fractures easily along cleavage planes where the graphite flakes are located. As a result, the graphite is liberated relatively easily with a minimum of crushing and grinding and little degradation of the large and XL flakes. While more tropical weathered deposits have cost advantages in terms of drilling, blasting, crushing and grinding, clay minerals interfere with recovery and have proved operationally to be project killers in a few cases.

Resources & Reserves

The resource estimate for Bissett Creek currently stands at 69.8 million tonnes of measured and indicated resources grading 1.74% graphitic carbon and 24 million tonnes of inferred resources grading 1.65% graphitic carbon (both at a 1.02% Cg cutoff grade).

Bissett Creek Resource

Cut-off 1.02%

	Tonnage	Cg%	In-situ Graphite (tonnes)
Measured	1,292,000	2.47%	32,000
Indicated	68,690,000	1.72%	1,184,000
Measured & Indicated	69,791,000	1.74%	1,213,000
Inferred	24,038,000	1.65%	396,000

The mineral reserve is shown in the table that follows:

Bissett Creek Reserve
Cut-off 0.96%

	Tonnage	Cg%	In-situ Graphite (tonnes)	Stripping
Indicated	28,341,000	2.07%	588,056	0.24/1

The Studies

The company completed a PEA on the Bissett Creek Project in 2011, a full Feasibility Study in August 2012, updated the FS economics in September 2013 with current prices, and then completed a PEA to show the economics of doubling production in the future if graphite demand increases. The company is now operating under the updated FS scenario from 2013 as it best matches the size it thinks suits current price conditions in the graphite space. In early 2018, it updated the PEA metrics (including Phase 1 which is essentially the FS) with fresh inputs to take account capital and operating cost inflation and currency and price movements since the preceding study.

The table below shows the key differences in the metrics between the original feasibility study, and that from 2013 which is now the plan the company is working to.

Bissett Creek Feasibility Studies

(in CAD)	Unit	Updated FS	Original FS
Probable reserves	Millions tonnes	28.3mn t.	19mn t.
Feed Grade	% graphitic carbon	2.06%	1.89%
Waste to ore ratio (excl. low-grade stockpile)		0.79	0.50
Processing rate	Tonnes per day	2,670 tpd	2,300 tpd
Mine life		28 yrs	23 yrs
Mill recovery		94.70%	92.7%-94.7%
Average annual production		20,800 t.	15,900 t.
Capital cost (incl. 10% contingency)		$101.6mn	$102.9mn
Cash operating costs	($/tonne of concentrate)	$795/t.	$968/t.
Mining costs	($/tonne of ore)	$5.63	$5.79
Processing costs	($/tonne of ore)	$8.44	$9.60
GS&A costs	($/tonne of ore)	$2.50	$2.94
CAD/USD exchange rate		$0.95	$1.00

The company has been probably too harsh on itself in using the exchange rate that it has employed here. Something like one CAD = US 80cts would substantially juice up NPV and the IRR.

Revised PEA Inputs

In February of 2018 the company announced the updated financial metrics for the Preliminary Economic Assessment on the Bissett Creek project. The previous PEA used a weighted average concentrate price of US$1,800 per tonne and a CAD/USD exchange rate of 1.05, which reflected market conditions at the time (as well as an 8% discount rate).

As is well known the CAD/USD exchange rate has moved substantially and the revised PEA used 1.25 while the price of graphite price in USD had declined. The net effect was is a 10% increase in the weighted average Canadian dollar price that Northern Graphite would realize for its concentrates.

Based on this change only, the project metrics now read:

- pre-tax internal rate of return of 30.3% (25.4% after tax)
- pre-tax net present value of CAD$292.5 m (CAD$192.2mn after tax) using an 8% discount rate
- Cash operating costs over the first 10 years of operation are estimated at US$547/t using the 1.25 exchange rate

However we should note that since the publication of the revised calculation the Canadian dollar has weakened further (US$1 = CAD$1.33) and the graphite price has recuperated.

It should be noted that the revision made no change to capital or operating cost estimates. GMining Services Inc. has been engaged to update costs and review other technical parameters.

The PEA used a weighted average, CIF Europe price of US$1,800 per tonne (CAD$1,890 per tonne) for mine concentrate. The price in early 2018 was estimated at US$1,660 per tonne (CAD$2,075) based on the following prices provided by Benchmark Mineral Intelligence for concentrates:

- US$850/t for small (+150 mesh) flake,
- US$950 per tonne for medium (+100 mesh) flake,
- US$1,175/t for large (+80 mesh) flake
- US$1,850 per tonne for XL (+50 mesh) flake

An independent European marketing consultant provided a price of US$2,250/t for XXL flake (+32 mesh) concentrate.

Mine Plan

The proposed development consists of an open pit mine and a 2,900 tpd processing plant with conventional crushing, grinding and flotation circuits. Electricity for the plant will be generated by CNG (compressed natural gas) fuelled generators. CNG will be trucked from the main Trans-Canada line, approximately 15 kms away.

The processing plant includes a sulphide flotation circuit to remove enough sulphides to make approximately 97% of the tailings benign. All sulphide- and non-sulphide generating waste rock will be backfilled into mined out areas of the pit after five years of operation, and all sulphide tailings after eight years, resulting in lower final closure costs.

The final mine plan only contemplated a 25 to 30 year operation and resulted in probable reserves of 28.3mn tonnes of ore grading 2.06%Cg based on a COG of 0.96%Cg. Probable reserves include 24.3mn tonnes grading 2.2%Cg that will be processed first and 4mn tonnes grading 1.26%Cg from a low-grade stockpile that will be processed at the end of the mine life.

In order to increase head grades in the initial years of production while maintaining a reasonable stripping ratio, ore grading between 0.96%Cg and 1.5%Cg will be stockpiled, largely within the mined out areas of the pit. The total low-grade stockpile will be 16.5mn tonnes grading 1.26%Cg and Northern claims that will provide flexibility in future operations as it will be available for processing at a later date, either through an expanded facility (as per the more recent expansion PEA) or at the end of the mine life. It also represents a low-cost source of ore that could be processed during periods of depressed prices.

Over 28 years of operation an average of 20,800 tonnes of graphite concentrate at 94.5% Cg will be produced. Cash mine operating costs will average CAD$795 per tonne of concentrate.

The capital cost to construct the processing plant, power plant and all associated mine infrastructure is shown in the table at the right, and estimated at CAD$102.93mn, including a $9.3mn contingency.

Bissett Creek - CapEx

	CAD$mns
Infrastructure	$9.38
Electrical Infrastructures	$11.67
Tailings & Water Management	$6.67
Mobile Equipment	$1.71
Mine Infrastructure	$0.05
Processing Plant	$39.93
Construction Indirects	$14.16
General Services	$5.76
Pre-production & Commissioning	$4.23
Total	$93.57
Contingency (10%)	$9.36
Total	$102.93

Phased Plan

The welcome trend in recent years has been for mine plans to introduce phased construction and production as a means of dealing with capex constraints and vagaries of metals prices. In essence this is "right-sizing" allowing the company to retain control of the reins. An over-large project in a weakening price environment is a nightmare scenario with Molycorp being the poster child for this type of disaster. This is particularly true of industrial minerals where it is not what you can produce but what you can sell.

Northern grasped this trend early on. A full Feasibility Study was filed in 2013 with respect to the Phase 1 development. Then a PEA, was subsequently filed in late 2013 which included a second phase:

Phase 1 – consists of building a mine and plant capable of producing over 20,000 tpa of graphite concentrate at an initial capital cost of CAD$101.5mn (US$76.7mn at current exchange rates).

Phase 2 – consists of a doubling of the plant throughput after three years of operation and increasing production to an average of 42,000tpa over the succeeding 10years

Production will be almost entirely large/XL/XXL flake with no fines

The timetable to production is subject to financing which is currently the subject of negotiations. The mine closure plan has been approved, which is the major permit required in the province of Ontario. Then the tentative schedule is operational permitting, financing and a start to construction by the end of 2019 with commercial production late 2020.

Infrastructure

The commute to the nearby towns is less than an hour negating the need to build a camp to house workers. It is also near to mining service centers (within 2-3 hours) for equipment dealers, suppliers, contractors, spare parts.

On the energy front, as mentioned earlier, the mine site is 15 kms from a natural gas pipeline with cost advantages of $0.09/kwh versus $0.30/kwh for diesel.

Permitting

The Mine Closure Plan has been filed and accepted by the Provincial Government and is the main environmental approval required prior to the commencement of construction. A number of other operational approvals and permits are required. This process is underway and they are expected to follow the main permit this year.

Economics

The 2013 Bissett Creek feasibility study has a pre-tax IRR of 19.8% (17.3% after tax) and a pre-tax NPV of $129.9 million ($89.3 million after tax) in the base case which uses a weighted average price of US$1,800/tonne for the concentrates that will be produced. The project showed significant leverage to higher prices as the pre-tax IRR increases from 19.8% to 25.7% and the pre-tax NPV from $129.9 million to $201.1 million at a price of US $2,100/t.

One should also consider the foreign exchange kicker from an extended period of the Canadian dollar trading at a substantial discount to the USD, which appears the most likely scenario at least through the minebuild and the first years of the mine's operation.

It is worth mentioning that three prospectors are entitled to a royalty of CAD$20 per tonne of graphitic carbon concentrate when the mine will be operational.

Revising Capex

SGS evaluated a number of crushing and grinding options with the objective of creating a simpler, lower cost flow sheet that maximizes the recovery of high value, large and XL flake graphite and maintains concentrate purity levels, while sacrificing the recovery of some lower value, smaller flake material.

The original flow sheet in the Feasibility Study consisted of SAG milling, flash flotation, regrinding followed by rougher flotation, and then polishing and cleaning which lead to overall recoveries of up to 95%. Testing to date indicates that SAG milling alone, followed by flotation, polishing and cleaning, can

achieve recoveries of up to 90% with almost no loss of large and XL flake production. This creates the potential to remove a large regrind ball mill and the rougher flotation circuit from the process plant.

Financing

The most recent financing by the company was in late November of 2017. A non-brokered private placement resulted in the issuance of 4,582,644 units at a price of $0.45 per unit for gross proceeds of $2,062,190. Each unit consisted of one common share and one half of one common share purchase warrant, with each full warrant entitling the holder to purchase one common share at a price of $0.60 per share for a period of two years.

Amongst other things the funds were destined towards a pilot plant test of the proprietary purification process which has the potential to provide a substantial competitive advantage in the manufacture of anode material for lithium ion batteries and for working capital and general corporate purposes.

Preliminary Mine Financing

($US mns)	
Equipment Leasing	$10
Debt financing (offtake partner)	$40
Equity	$35
Total	$85

Expansion Opportunities

The company and its geologists have posited that the potential mine life is currently over 80 years based on measured and indicated resources only. Due to the flat lying nature of the deposit, production can be expanded without a significant increase in the stripping ratio and capital or operating costs. The company is currently assessing the potential to increase production by 20-30%. If this can be achieved with only a small increase in capital costs it will give a further boost to the NPV/IRR.

The company feels that an increase in its volumes from say 20,000 tpa to 25,000 tpa would be prudent and non-disruptive of the graphite marketplace.

Offtake

In early June 2018 the company announced that it had signed a Memorandum of Understanding with a European commodity trading company to sell 100% of the projected output from the Bissett Creek project to Chinese offtakers. This is a useful boost to the company's credibility and acceptance of the viability of the project.

The parties intend to enter into a binding agreement when a number of conditions have been met, including the arrangement of project financing. Northern's partner will be identified at that time as per their request.

It has become almost *de rigueur* to have an offtaker these days in the graphite space to even be in contention. It does however seem that Northern are free to cut a better deal should one come along.

Comparatively Speaking

Gigantism is always a problem in the mining space. In the graphite arena, many companies are modelling projects in excess of 50,000 tpa because of their perception that massive throughput is the only way their economics make sense. In doing so they ignore the effect this will have on prices and the challenge of selling large volumes of small flake and fines. Syrah is the poster child for this strategy (with Zenyatta of old being of a similar disposition). This has led us to style Syrah as the Molycorp of graphite. Northern on the other hand is taking a more conservative route and starting at 20,000 tpa to 25,000 tpa with expansions as the market grows. Most players have big resources but should only produce what the market can bear.

We have used the same price assumptions for everyone to put them on a comparable basis. An assumption then has to be made about where the product will be sold to calculate concentrate transportation costs. This is necessary to adjust for the different locations of the deposits. All the numbers in this spread sheet are pretty well from 43-101s with concentrate transportation being the only real estimate by me.

The average revenue per tonne for most projects is a lot lower than the estimates used in their NI43-101s. Very few projects are economic at realistic current prices.

	Flake Size Distribution [1]				
Flake Size	**Northern**	**Mason**	**Focus**	**NOU**	**Syrah**
+32 XXL	23%			1%	-
+50 XL	40%	13%	12%	15%	5%
+80 large	28%	16%	28%	35%	10%
+100 medium	10%	6%	13%	21%	5%
+150 small	0%	6%	24%	21%	30%
-150 fines	0%	59%	23%	6%	50%
	100%	100%	100%	100%	100%
Average revenue per tonne	**$1,698.60**	**$837.93**	**$957.60**	**$1,094.90**	**$630.00**

1. blended so that 80% meets size requirement and 94%+ Cg
2. FOB Europe

Northern has the lowest grade but the best economics because of the highest revenue per tonne (due to flake size distribution), lowest cost per tonne of ore mined and processed (simple flowsheet with fewer grinding and flotation steps, higher throughput, access to natural gas, good location which affects the cost of labour, supplies and equipment), and low capital costs. This is evidenced by Northern having a similar EBITDA (concentrate production times margin) to Focus and Mason despite having a much lower grade and producing half as much concentrate.

Production Metric Comps (US$)	Northern	Mason	Focus	NOU	Syrah
Grade (%)	2.1%	28%	15%	4.4%	16%
Annual production (tonnes)	**20,800**	**51,900**	**44,300**	**100,000**	**250,000**
Average revenue per tonne	**$1,698.60**	**$837.93**	**$957.60**	**$1,094.90**	**$630.00**
Cost per tonne of ore	$12.96	$102.00	$47.94	$16.23	$58.59
Mine gate costs/t of concentrate	$726.92	$373.41	$339.23	$384.62	$375.00
Concentrate transport/t [3]	$37.50	$131.65	$124.21	$147.50	$100.00
Margin per tonne	**$934.18**	**$332.87**	**$494.16**	**$562.78**	**$155.00**
EBITDA (millions)	$19.43	$17.28	$21.89	$56.28	$38.75
Capital Cost (millions) [4]	**$85.80**	**$211.80**	**$140.90**	**$229.80**	**$300.00**

3. assume 10kt sold in NA, 20kt in Europe, rest in Asia

4. incl working capital, reclamation bonding, capitalized startup costs

Very few graphite projects are economic due to low prices and high capital costs. Most are presenting their economics using prices that are much higher than market or mixing in value-added processing to make the mine project look better. Despite LiB demand growth, graphite prices have not responded due to Chinese small flake oversupply and the onset of production from Syrah (even though it's only at 50% of nameplate).

Mine Building Costs

Opinions are divided on how much a graphite mine and its attendant processing facilities should cost. We have met those who are skeptical that a mine can be built for $30mn or $40mn in Africa and we have met others that favour the gargantuan and tout budgets in the multi-hundreds of millions. Imerys, one of the industry establishment, recently built a 20,000tpa mine in Namibia which involved retrofitting an already existing fluorspar plant and it still cost US$60mn.

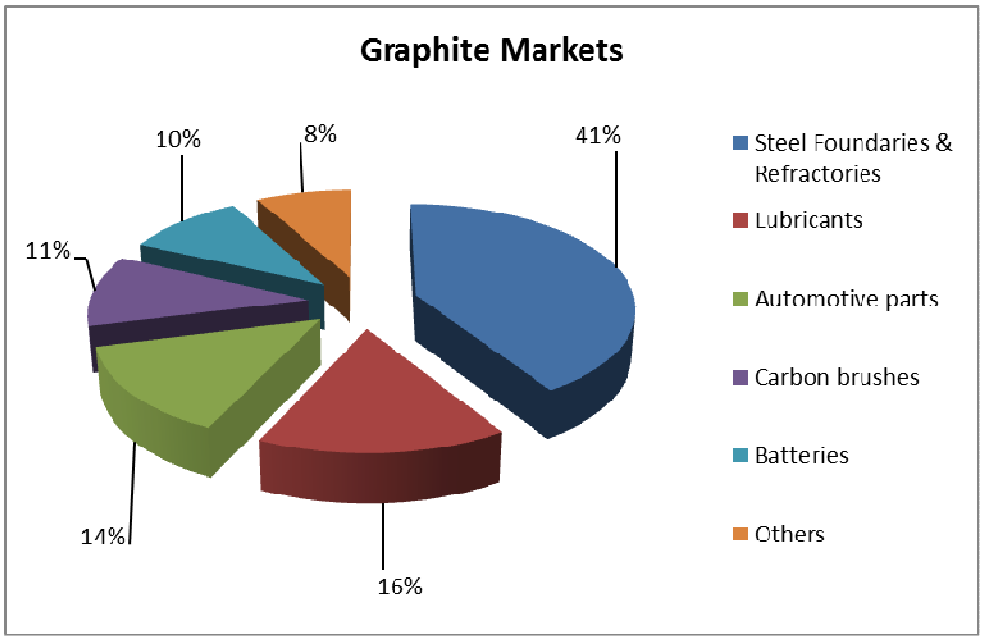
Three new graphite mines have come into production in Africa and all have metallurgical problems. Syrah has only attained up to 70% of recoveries on a limited basis and 50% throughput after more than a year of commissioning. The new Imerys mine in Namibia opened and then closed as concentrate purity and throughput design levels could not be achieved. AMG has started up a small 9,000tpy operation in Mozambique which is also having metallurgical challenges. African projects often extoll the benefits of weathered ore which results in lower drilling/blasting/crushing/grinding costs. However, clay minerals can seriously affect recovery, throughput and purity.

Graphite Reality Check

Firstly we shall start with the great truism of the graphite space: the West needs its own secure sources of supply but no one is willing to pay a premium for that security, or for environmentally sustainable supply either, especially when they are trying to drive battery costs down.

The second truism may seem an oxymoron but is worth repeating: deposits produce a range of flake sizes. The prices of XL flake categories are much better than small flake, but the markets are not nearly as big. The flake graphite market is 750,000 tpa. All graphite juniors are basing their economics, such as they are, on being able to achieve high large/XL flake prices. But there is only room for one or two new producers (or a multiple of that if Syrah was not present).

All that being said, there is an opportunity in graphite, but it is not just in batteries. Below can be seen the current usages for graphite.



In the view of Northern's management the opportunity is in the production of large, and particularly XL, flake graphite in North America, upgrading it into value added products, and selling them into North America (and European) industrial markets. Production of large/XL flake graphite is declining and there are shortages because most comes from Shandong Province in China which is suffering from the depletion of ore reserves and strict environmental regulations. Production growth in China is coming from Heilongjiang Province, which is almost all small flake and destined for the LiB market.

Large/XL flake graphite is mainly used in higher price, high margin industrial markets. In the West, these markets are dominated by a small number of trading companies, most of which are privately owned. They essentially buy, grade, inventory, repackage and do value added processing on Chinese graphite and sell it into many small, specialty markets. This should be a matter of concern to the US (and particularly the US military).

The prices they get are far higher than those quoted by industry sources that get data from a small number of large volume "commodity" buyers. These companies are effectively sales agents for Chinese graphite miners and as we have seen over the last year the relationship between China and the US is in rocky territory indeed. Almost none of these intermediaries own their own source of supply and the

only North American graphite mine (that of Imerys) will be closing in the next year or two due to the depletion of reserves.

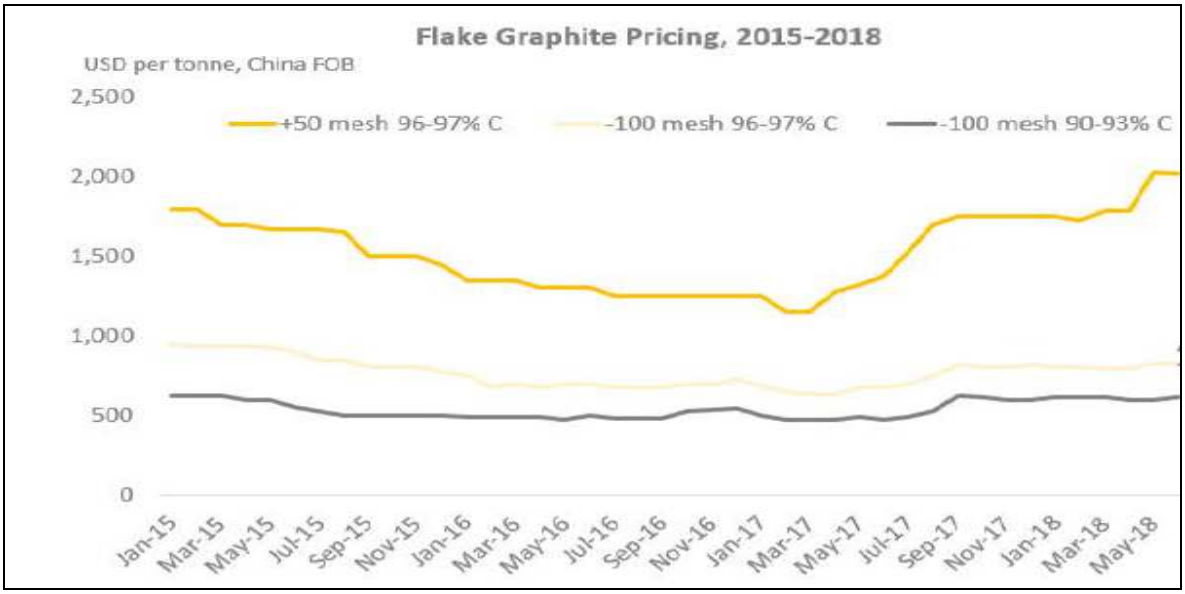
With respect to the bigger picture, potential demand growth from producers of Lithium ion batteries used in the EV and grid storage markets has focused a lot of attention on graphite, but junior graphite wannabees are facing a number of significant challenges.

Almost all LiB anode material is manufactured in China from small flake graphite and there is excess production capacity. Some analysts talk about aging, declining graphite mines in China and environmental closures but they are referring to the traditional production areas in Shandong Province. Graphite production capacity in Heilongjiang Province is expanding, there is currently excess capacity and resources are very large. As a result, the anode material market is a low margin, competitive business and will be for some time. Excess capacity may eventually be used up but only after the substantial growth forecasts for EVs are realized.

Graphite – the Ups & Downs

While graphite shows little potential for the same type of price squeeze that has propelled other battery metals higher, there is a distinct feeling that major Western end-users want to see a non-Chinese graphite supply (and downstream value-added chain) industry evolve so they will not be vulnerable to Chinese policy gyrations or attempts at market manipulation.

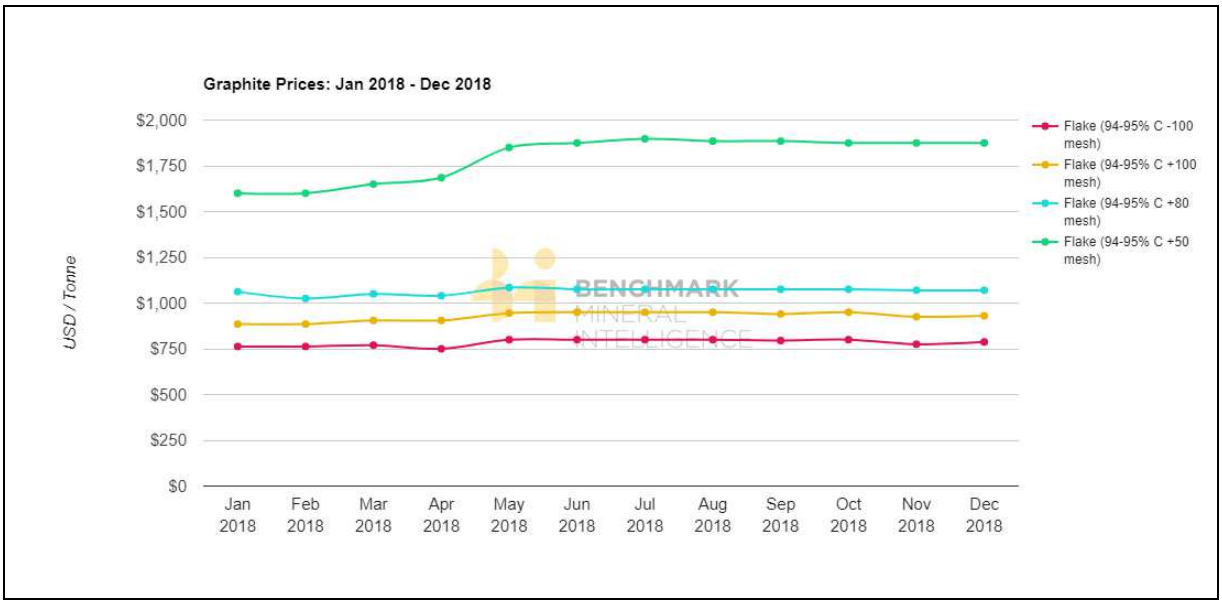
The turn in graphite prices occurred in mid-2017 with the price of large flake (+80 mesh) graphite increasing by around 30% in the space of a few months, again breaching the key US$1,000/tonne (FOB China) level. The move was driven by tightness in the supply of large and XL flake graphite and some speculative investment.



European and North American prices usually trade US$50-100/tonne higher than China FOB, most of the

time. XL flake (+50 mesh) prices have also risen significantly while smaller flake sizes have experienced more moderate price increases.

Since the price uplift of 2017/18 the mineral in all its categories has largely flatlined:



Source: Benchmark Minerals

Reasons cited for the revival in graphite prices included:

- Production and supply problems in China due to stricter enforcement of environmental and safety standards and restrictions on the use of dynamite in some areas. High purity and large flake sizes have been particularly affected. Also, production costs have continued to increase due to environmental regulations, higher taxes and land fees, labour and power cost inflation and shortages of ore supply. China is introducing a new environmental tax in January, 2018 which is expected to have a significant effect on the graphite industry and has announced its intention to build a graphite stockpile equal to 80 per cent of annual production by 2020.

- The steel industry started to recover in 2017 but has been flatlining of late. Refractories remain the largest market for flake graphite and mainly require larger flake sizes.

- Continued strong growth in lithium ion battery demand. Small flake graphite is used to make LiB anode material because it has been plentiful and low cost. If LiB demand growth meets expectations, anode material suppliers will likely have to start using larger flake sizes and to compete with traditional markets for supply creating further pressure on prices. Also, synthetic graphite prices have surged due to environmental and capacity problems relating to its main use in electrodes for the steel industry. This is seriously affecting the supply and pricing of synthetic LiB anode material which makes natural graphite more attractive.

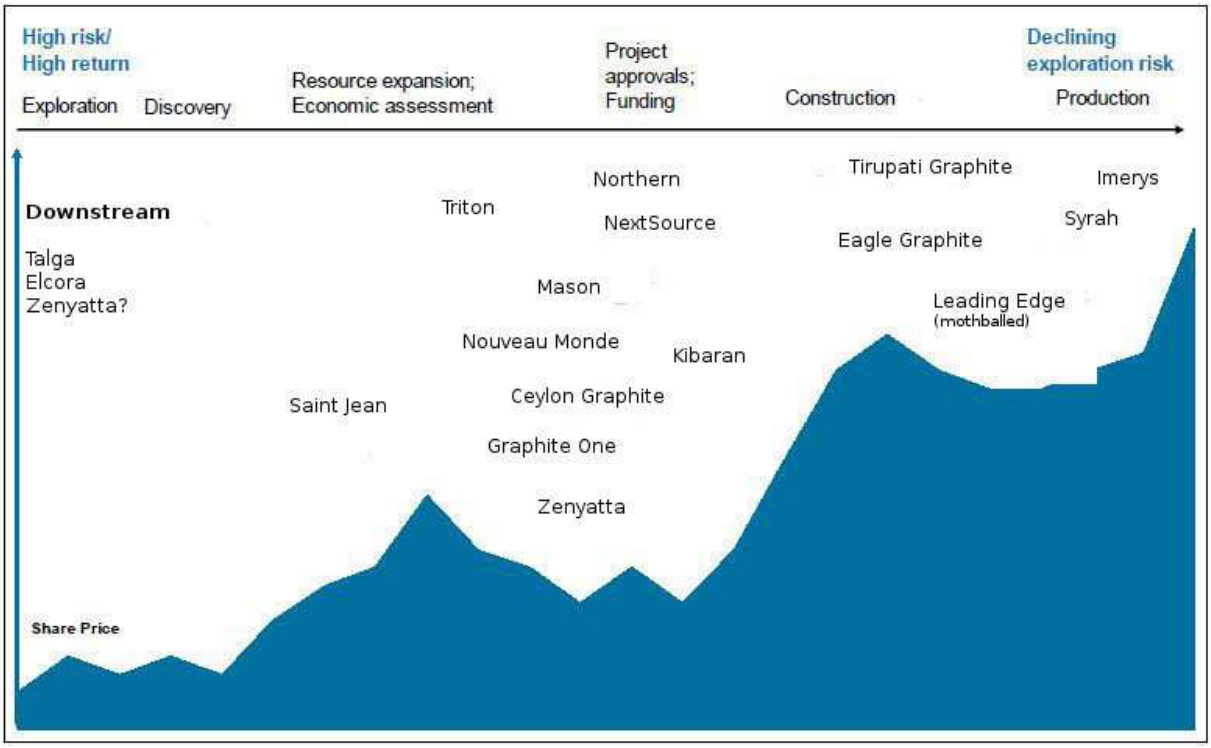
- XL flake production is declining as resources in Shandong Province, a major source, are being

depleted and it has also been heavily affected by environmental closures. Heilongjiang Province, the largest producing region, has mainly smaller flake. The expandable graphite market, which is largely based on XL flake, is one of the fastest growing along with LiBs and this is putting additional pressure on prices. Expandable graphite is used for thermal management in consumer electronics, as a gasket material in the automotive, petroleum, chemical and nuclear industries, to make conductive plates for fuel cells and flow batteries, and as a fire retardant.

The Graphite "Lifecycle"

Below can be seen our "lifecycle" chart adapted for the Graphite space. Imerys, the grandfather of the industry is clearly ahead. But with its main mine nearing the end of its life and the fluctuating fortunes of its new mine in Namibia the question is who shall be the supplier (if any) to its processing plants and others.

Elcora was briefly producing but our intelligence tells us that has ceased production at its small mine in Sri Lanka. Eagle Graphite has a graphite operation in British Colombia but volumes are so small that it is essentially a pilot plant.



Syrah Resources, after more than year of trials and tribulations, has entered the market and declared commercial production in Mozambique even though most recent numbers indicate it is operating at only 50% of nameplate capacity. Its viability was questionable before because the project is "too big for the market" but running at half capacity inevitably raises the question of whether or not it can survive.

After that come a bunch of developers, that are milling around in search of offtakers or financiers.

Tirupati Graphite is an upcoming London listing of assets controlled by an Indian group that are currently graphite processors in India and are shortly opening some small mines in Madagascar. Ceylon Graphite is a TSX-V listed entity that intends to kickstart some past-producing graphite properties in Sri Lanka.

NextSource continue with their plans for a modular approach to adding capacity in Madagascar but are not, as yet, producers.

Hopefully Leading Edge will return to fray with their plant in Sweden (which briefly got into production several years ago).

In preparing our estimation of where the various players are in the race to the graphite "finish line", we have discarded some well-known names, such as Great Lakes, Lomiko, Focus and Canada Carbon, from the running. The recent travails of Zenyatta (now gone Zen in a makeover) make us suspect it will never be a miner and its releases are focused on its technologies. Likewise with Talga and, seemingly, Elcora.

Great Lakes appear to have dropped any mining pretensions (to focus on processing) and Canada Carbon is going to be a marble miner first (so hard to quantify). Focus is not our radar screen and Lomiko seem to be eternal explorers.

Risks

The prime risks for the company at this time and the near future include:

- A downturn in graphite prices
- A prolonged hunt for financing leading to the project remaining stalled
- Too many competitors on the path to production which might result in mines being built for the wrong reason and stoke fears of an over- crowded marketplace and potential over-supply

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 excessive overproduction by the likes of Syrah. In China capacity has been shutdown for "environmental remediation" which is a perennial excuse by the Chinese. It may be true, or partly true or just a means to ginger up the price of the mineral. In any case it has worked.

Financing is a perennial issue in mining markets. Graphite was further burdened by its first "boom" occurring pretty much when most mining markets were down in the dumps. Despite the mooted CapEx in many graphite projects being at the lower end of the scale for minebuild budgets (compared to the broader universe of metals) very few projects have been built this decade. Curiously the project that did get built, Syrah's, is the one that shouldn't have. Financing was 100% equity from the Australian equity markets that became enamoured with the story. It started at less than US$200mn and is now well over US$400mn, and the project is not close to design parameters. Debt financing requires a real offtake

agreement and to date the ones that have been announced are not the “take or pay” required by lenders. They are something different that is not disclosed for “competitive reasons”.

As noted many of the remaining graphite projects won’t be going anywhere due to excessive capex numbers attached to their aspirations. Syrah will most likely be the only “big” producer to come to market with the other likely entrants being non-disruptive smaller capex wannabes.

Conclusion

There have been so many mine plans on the Bissett Creek deposit that investors might be excused for being somewhat confused. At least the regular flow of mine plans shows that the management are trying to position the project to match the state of the graphite price and NOT coming up with one plan that does not work and flogging a dead horse.

Despite having an expansion scenario the company is cognizant that the current market does not justify going with an over-sized project, hence its interest in pursuing an earlier feasibility study as the most likely to succeed in the current environment. Most of its peers are modeling projects with 40,000-50,000tpa (or more) of production. This is very optimistic given that the annual flake market is maybe 750,000 tonnes.

Having a grip on reality is one of the key elements for gaining our interest and support for a project. Reality is in short supply in the graphite space with some off the chart production and capex projections that would make even a Rare Earth wannabe blanch. Northern Graphite is hunting for the title as the most reasonable capex of the greenfield sites and thus far has taken the prize.

Northern Graphite's strategy is to establish itself in North American and European markets using the strategic advantage of having a North American source of supply that is located close to infrastructure and has a reasonable capital cost, good economics at current prices, a realistic production level that can be absorbed by the market and production that will be mainly large/XL/XXL flake concentrates.

When we last covered Northern Graphite in December 2015 we allocated the stock a LONG rating with a twelve-month target price of CAD$0.32. The rest is history as graphite eventually shucked off its gloom and started rising again which, with progress in the company itself, took the company to a high of 62 cents in early 2016 and then spiking (briefly) to over 70 cents in late 2017. It has been a wild ride for Northern’s followers. The chart currently seems to be making the same search for a bottom, after which the recovery is invariably brusque.

While location is everything in real estate, in resource investing one must always be mindful of the three “Ps”. Project, price and people. Bissett Creek is a sound asset in a good location, the company is trading at a low valuation and is run by a skilled team, respectful of the money and commitment that investors have contributed. With a full feasibility study in its armoury, its major environmental permit granted and a tight capital structure, now all that is needed is a stable price environment to begin the financing for the minebuild.

We reiterate our rating of Northern Graphite as a **Long** with a twelve month target price of 48 cents.

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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