HALLGARTEN & COMPANY

Initiating Coverage

Christopher Ecclestone
cecclestone@hallgartenco.com

Northern Graphite (NGC.v)

Strategy: LONG

Key Metrics

Price (CAD)	$0.215
12-Month Target Price (CAD)	$0.32
Upside to Target	49%
High-low (12 mth)	$0.175 - $0.89
Market Cap (CAD mn)	$11.0
Shares Outstanding (millions)	51.3
Fully-diluted O/s (millions)	56.8

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
- + 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$2mn in cash in Treasury
- ✘ Graphite prices have recently been sliding with much of the blame going to poor management of the market by the Chinese
- ✘ The financing scene is tough and Northern is at the point where it must get the project moving

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 capex soars and the chances of success plummet.

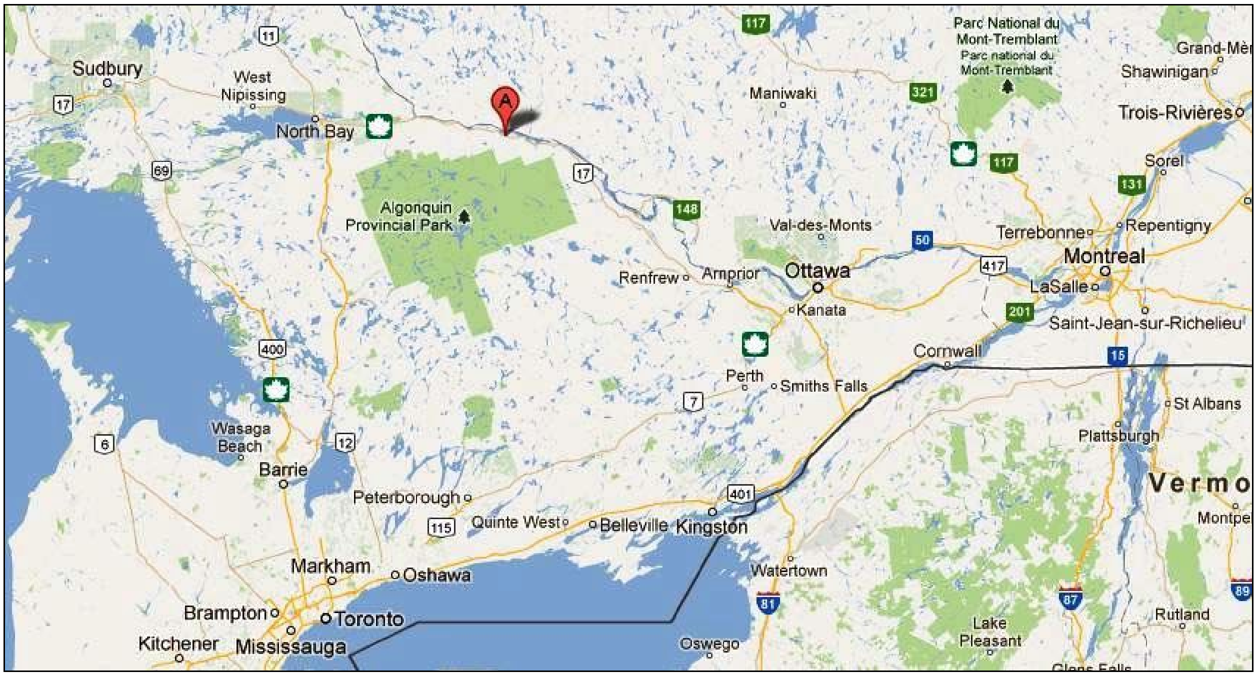
Northern Graphite was the first graphite stock we ever stumbled across at the end of last decade when the commodity had none of the sound and fury that it generated since. The company owns a 100% interest in the Bissett Creek large-flake graphite deposit, located in eastern Ontario.

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, the lowest capital costs, the best flake size distribution and the lowest unit operating costs which offsets it being a lower grade deposit.

Bissett Creek

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



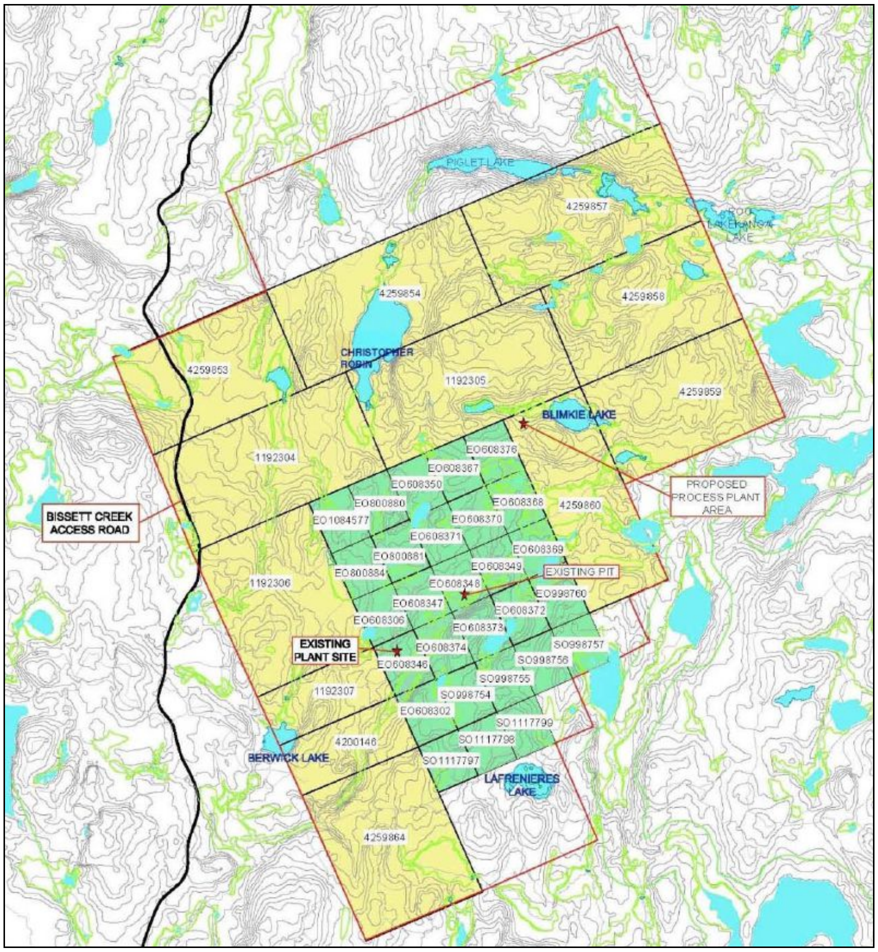
Extensive drilling programs and metallurgical work were conducted in the 1980s and from these an economic analysis was undertaken with the engineering firms, Kilborn, Cominco Engineering and KHD Humbolt Wedag putting out a full Feasibility Study on the project in 1989. It estimated a proven and probable 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.

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.

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 Pre-cambian meta-sediments. The host rock to the graphite is a medium to coarse-grained, grey, quartz-rich gneiss. The three (3) 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.



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.

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).

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.

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 CDN$795 per tonne of concentrate. The capital cost to construct the processing plant, power plant and all associated mine infrastructure is estimated at $101.6 million including a $9.3 million contingency.

Bissett Creek Capex
(in US$)

Published capex	$84.7mn
Working capital	$3.4mn
Reclamation bond	$1.3mn
Deferred items	$2.7mn
Other	($1mn)
Total	$91mn

NGC anticipates being in a position to commence construction early in 2016 and to commence production in 2017. However, that timetable is subject to financing which is currently the subject of negotiations. As we are nearly at the beginning of 2016, this schedule must inevitably be pushed back slightly even in the most optimistic of financing outcomes.

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 in due course.

Economics

The Bissett Creek project 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 has 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.

The 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/t of graphitic carbon concentrate when the mine will be operational.

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 expansion PEA update indicates that Bissett Creek has very attractive economics even at or below current depressed graphite price levels. The pre-tax IRR is 31.7% (26.7% after tax) and the pre-tax NPV is $264.7 million ($178.9 million after tax), in the base case which uses an 8% discount rate and a weighted average price of US$1,800/tonne of concentrate.

Risks

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

- A prolonged hunt for financing leading to the project remaining stalled
- Further down-leg in graphite prices
- Too many competitors “becoming real” which could create the impression of a crowded marketplace and potential over-supply

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 price 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 less than 400,000 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 capex projections that would make even a Rare Earth wannabe blanch. Northern Graphite is hunting for the title as lowest capex in the greenfield sites and thus far has taken the prize. Now to make it reality.

We are allocating Northern Graphite a LONG rating with a twelve-month target price is USD$0.32.

Historic Chart for Cdn:NGC by Stockwatch.com 604.687.1500 - (c) 2015
Wed Dec 9 2015 Op=0.20 Hi=0.235 Lo=0.19 Cl=0.215 Vol=39,690 Year hi=0.89 lo=0.175
Cdn:NGC
0.92
0.88
0.84
0.80
0.76
0.72
0.68
0.64
0.60
0.56
0.52
0.48
0.44
0.40
0.36
0.32
0.28
0.24
0.20
Volume
600 k
400 k
200 k
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
2014
2015

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.

Hallgarten's Equity Research rating system consists of LONG, SHORT and NEUTRAL recommendations. LONG suggests capital appreciation to our target price during the next twelve months, while SHORT suggests capital depreciation to our target price during the next twelve months. NEUTRAL denotes a stock that is not likely to provide outstanding performance in either direction during the next twelve months, or it is a stock that we do not wish to place a rating on at the present time. Information contained herein is based on sources that we believe to be reliable, but we do not guarantee their accuracy. Prices and opinions concerning the composition of market sectors included in this report reflect the judgments of this date and are subject to change without notice. This report is for information purposes only and is not intended as an offer to sell or as a solicitation to buy securities.

Hallgarten & Company or persons associated do not own securities of the securities described herein and may not make purchases or sales within one month, before or after, the publication of this report. Hallgarten policy does not permit any analyst to own shares in any company that he/she covers. Additional information is available upon request.

Hallgarten & Company acts as a strategic consultant to Northern Graphite and as such is compensated for those services, but does not hold any stock in the company, nor has the right to hold any stock in the future.

Web access at:

Research: www.hallgartenco.com

60 Madison Ave, 6th Floor, New York, NY, 10010