

# **Northern Graphite has an MOU to sell 100% of their graphite production to China**

Graphite is a naturally occurring form of crystalline carbon. It is a native element mineral found in metamorphic and igneous rocks. It is extremely soft, cleaves with very light pressure, and has a very low specific gravity. In contrast, it is extremely resistant to heat and nearly inert in contact with almost any other material. These extreme properties give it a wide range of uses in metallurgy and manufacturing.

Northern Graphite Corp. (TSXV: NGC | OTCQX: NGPHF) is a Canadian based mine development company with a principle asset, their 100% owned Bissett Creek Graphite Project, located in the county of Renfrew, Ontario, Canada.

## **Bissett Creek Graphite Project**

Bissett Creek is a very advanced stage project, as their Bankable Feasibility Study (BFS) has been completed and the major environmental permit obtained. Additional operational permits are required to commence operations and are expected to be received by early 2019. The Company believes that Bissett Creek has the best location, best infrastructure, highest margin and highest percentage of large flake production of any new graphite project.

A full Feasibility Study was completed on the property in 1989. It estimated a proven and probable reserve, and concluded that the project was economic; however it was never developed due to a subsequent decline in graphite prices. Northern Graphite re-activated the project due to higher prices and renewed interest in graphite projects.

Bissett Creek is a very unique deposit in that approximately 90% of the contained graphite will be categorized as large and extra large flake which is believed to be the highest ratio in the industry. Construction of the mine will take approximately 18 months and the estimated capital cost is only C\$102 m, including a C\$9.3 m contingency.

The Company hopes to be in production in 2020 (subject to financing) and the mine is expected to produce an average of 20,800 tonnes of graphite concentrate per year.

## **Timeline to Production**

Approval of Mine Closure Plan	<b>received</b>
Financing (US\$80M)	2018
Operational permitting	2018/2019
Start Construction	<b>2019</b>
Commercial Production	<b>2020</b>

## **Solid results at Bissett Creek – BFS and PEA**

The Bankable Feasibility Study for Stage 1 was based on a graphite selling price of \$US1,660/t and operating costs of US\$632/t and resulted in a post-tax NPV of C\$117.8m, and a post-tax IRR of 20.3%. Cash operating costs are low and benefit from a low 0.79 waste to ore ratio, simple flow sheet, low cost natural gas power generation, and proximity to infrastructure. The measured and indicated resource is large enough to significantly expand production in the future. The Company has completed a Stage 2 Preliminary Economic Assessment (PEA) based on 33,183/t pa graphite production. The post-tax NPV8% for Stage 2 is C\$192.2m.

	<b>BFS</b> (phase 1)	<b>PEA</b> (phase 2)
<b>Annual Production</b> (tonnes)	20,800	33,183
<b>Capital Cost</b> (\$CDN millions)	\$102.0	\$102.0
<b>Expansion Capital</b> (\$CDN millions)	-	\$45.0
<b>Price</b> (US\$/t)	\$1,660	\$1,660
<b>Operating costs</b> (US\$/t)*	\$636	\$556
<b>Mine Life</b> (years)	28	22
<b>After tax IRR</b> (%)*	20.3	25.4
<b>After tax NPV</b> (\$CDN millions)*	117.8	\$192.2

On June 2018 Northern Graphite signed a Memorandum of Understanding with a European commodity trading company to sell 100% of the projected output from the Bissett Creek graphite project in China. Tests conducted by the trading company from a number of different sources outside China have found the Bissett Creek graphite is of the highest quality and fits best with market requirements.

CEO Gregory Bowes commented: "The fact that we can sell up to 100% of production in China alone is very strong confirmation of current market conditions and provides a base level of sales which will enable the Company to pursue project financing. Demand for XL/XXL flake is also strong outside of China and Northern has the flexibility to pursue other opportunities to diversify sales."

The Company has also developed a patent pending purification technology for upgrading flake graphite for use in lithium-ion batteries (LiBs) and other value added markets. It represents a cost competitive, environmentally sustainable alternative to current Chinese methods.

Although graphite prices have been depressed in recent years the steel industry is recovering, and new applications such as

LiBs are creating significant demand. Even modest adoption rates of electric vehicles (EVs) will require multiple new graphite mines. Northern Graphite Corporation is in a strong position having a MOU in place that sees 100% of their projected production sold to a country whose graphite needs will only increase through the continued use of graphite in lithium-ion batteries.

Northern Graphite Corporation is headquartered in Ottawa, Canada; and has a market cap of C\$16.3 m.

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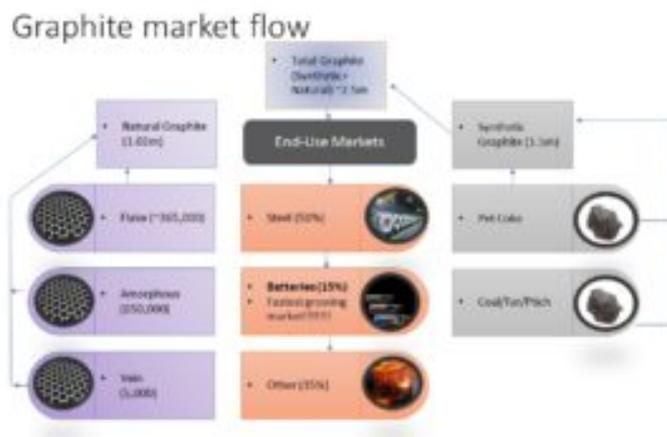
## **Analyst describes Northern Graphite as a near-producing, lean, capital efficient junior**

Northern Graphite Corp. (TSXV: NGC | OTCQX: NGPHF) (“Northern Graphite”) is set to start mine construction this year, with the view of commencing commercial production as early as 2018. The deposit -an open pit operation, promises a cheap operating rate, capable of producing graphite flake concentrates at \$640/tonne, which is less than half of the current market rate of around \$1,700/tonne.

Northern Graphite’s Bissett Creek’s flake deposit is impressive. It is located in Eastern Ontario, has a life of mine of 28 years and is targeting an initial production of 20,800 tpa. From a financial perspective, Northern Graphite has zero debt and US\$1.2 million in capital, which, for a mining junior not yet in production, is no small feat. Most importantly, the mine is scaleable and the expansion is a

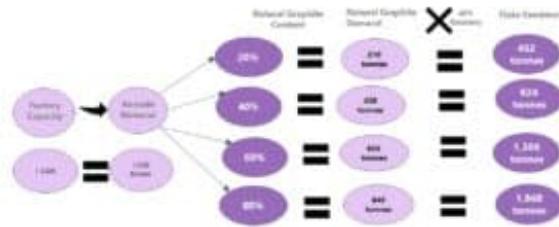
fairly cheap undertaking. This allows Northern Graphite to take full advantage of market conditions and increase production in line with market demand.

If one considers investing in graphite, flake graphite is where you want to be. Not only are the fortunes of flake graphite dependent on a growing battery market, as opposed to steel, but it is also driven by scarcity. The fact that there's currently no flake graphite production in North America, makes Northern Graphite even more compelling. And in terms of pricing, flake graphite is directly affected by the level of purity. From this vantage, the fact that Northern Graphite has just announced an upgrade in the purity of its concentrate to 97.9% is extremely valuable.



The majority of the available graphite is synthetic, derived from pet. coke and coal tar. From an end-use perspective, batteries comprise only 15% of demand, but is the largest growth market.

How much additional flake graphite is required for every GWh of battery production?



It is estimated that every additional GWh of battery production requires between 462-1,848 tonnes of Graphite Flake feedstock. Given the expected growth in battery-propelled technologies, Flake Graphite has a bright future

What is more, Northern Graphite has developed a proprietary process in creating concentrate in a more environmentally responsible manner with an excellent recovery rate, both on SPG and flake processing, creating the first viable and cost effective process to the traditional way of producing concentrate.

The company's management is highly experienced, lending credibility to the operation. Not only are they experienced in the mining arena and running successful businesses, but they also have experiences within the lithium, copper and gold mining spaces. They have proven that they run a tight ship and keep costs firmly under control, imbuing much confidence from an investor point of view.

We have seen that in the company's capital raising efforts, (the latest was in March, being the private placement that raised US\$2.5 million). The placement was oversubscribed, which Gregory Bowes, CEO of Northern Graphite, viewed as a reflection of the backing the company enjoys from its investors and a bullish outlook for the graphite market.

*“The financing provides the means to continue moving forward with preparations for full project financing, construction and production,” Bowes said about the oversubscribed placement.*

To summarize, we like Northern Graphite as a near-producing, lean, capital efficient junior. Its capital expenses are low. It is cash positive with no debt. And it owns a world class flake deposit that is scaleable and is expected to grow investors’ money in the years to come. As long as the graphite market fundamentals remain positive for Northern Graphite, we see the company soaring to new highs.

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## **Tesla news bolsters confidence in Canadian graphite project**

☒ Northern Graphite Corp. (TSXV: NGC | OTCQX: NGPHF) is a mineral exploration and development company that owns a 100% interest in the Bissett Creek graphite mining project located in eastern Ontario.

Northern’s Bissett Creek mine is an advanced, pre-development stage project that completed its NI 43-101 Final Bankable Feasibility Study in 2013, and was recently granted its major environmental permit. Northern expects to commence construction in 2017, subject to the availability of financing and species-at-risk permit, both reported to be in advanced stages. Their company website states that the Bissett Creek project has the best flake size distribution and highest margin of any new graphite project, with the added advantages of low capital costs and realistic production targets relative

to the size of the market.

A significant growth in demand for graphite is expected since it is essential to cell phones, cameras, laptops, power tools, etc. and applications of Lithium-Ion batteries (LIBs) continue to multiply. Both the EU and US have declared graphite a supply critical material. In 2013, the global graphite market was valued at US\$ 13.6 billion (including synthetic and amorphous graphite), and is projected to increase at 3.70% CAGR and reach US\$ 17.5 billion in 2020.

Tesla Motors' recently announced plans to manufacture lithium-ion batteries, further indicating a promising future for Northern's project as numerous countries strive to increase the uptake of electric vehicles, and experience increased demand for newer technologies such as grid energy storage systems.

☒ China has recognised this dynamic and since 2012 has increased its imports of graphite exponentially, whilst at the same time, global supply actually fell from its peak in 2011 of 450,000 tonnes to 300,000 tonnes in 2015. This has left a gap to be filled by junior miners.

Northern expects that its plant will process up to 2,900 tonnes of material each day from commencement of production in 2018, with over 90% of the contained graphite being categorised as large flake, the highest in the industry. Over 28 years of operation an average of 20,800 tonnes of concentrate will be produced each year, at an average cash mining cost of CDN\$795 per tonne. The capital cost to construct the processing plant, power plant and associated infrastructure is estimated at a total of \$102m. Northern's feasibility study in 2013 used a weighted average price of \$1,800/tonne to value its concentrates, while prices have since come down, the outlook for graphite is positive, underpinned by solid fundamentals.

With respect to the junior graphite market, the majority are focused on producing flake graphite for batteries. Annual world flake graphite production is 370,000 tonnes, while it takes around 100,000 tonnes of flake concentrate to produce the anode material for 400,000 Tesla Model 3's. This implies

that the 370,000 tonne flake market will have to increase by around 27% to service Tesla's requirements alone. Our last assessment was that graphite flake concentrate prices were trading at \$780-840/tonne (80 mesh, 94-97% Cg) in October 2016.

Northern announced this year that they have advanced their proprietary purification and coating technologies and joined forces with Elcora Advanced Materials Corp. (TSXV: ERA | OTCQB: ECORF), Nouveau Monde Mining Enterprises Inc. (TSXV: NOU), Metals of Africa Limited (ASX: MTA), Coulometrics LLC and a private industry partner to acquire a micronizing and spheronizing mill to produce spherical graphite ("SPG"), a critical step in the production of anode material used in LIBs. All natural based SPG is currently produced in China and is purified using sulfuric and hydrofluoric acid, the method is unsustainable due to high levels of untreated waste and increasing demand for environmentally friendly alternatives. On October 27<sup>th</sup> 2016 Northern and its associates announced their mill was installed and operational.

The Bissett Creek project is in a politically stable authority only 15km from the trans-Canada highway and has easy access to the port of Montreal and north-eastern US markets. Its flat geography makes for easy future expansion and Bissett Creek has very attractive economics even at or below current depressed graphite price levels. Graphite deposits generally yield less than 15% XL flake and yet 50% of Bissett Creek's production will be XL flake, providing the Company with the choice of serving both the LiB and expandable graphite markets.

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# Northern Graphite: Right-Sizing for Take-Off

This company 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. Northern Graphite Corp. (TSXV: NGC | OTCQX: NGPHF) 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 company owns a 100% interest in the Bissett Creek large-flake graphite deposit, located in eastern Ontario, which is located 15kms from the Trans-Canada Highway. The site is however 130 kms from railway connections, but only five hours by road from the port of Montreal.



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 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.

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 proposed development consists of an open pit mine and a 2,900 tpd processing plant with conventional crushing, grinding and flotation circuits. 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.



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.

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 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.

## **Conclusion**

For NGC this is all about rightsizing for current conditions. Despite having an expansion scenario the company is cognizant that current graphite prices do not justify going with an over-sized project. 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.

Click [here](#) to see the Hallgarten & Company report on Northern Graphite.