# Nemaska Lithium on the edge of production for the booming lithium battery market

The coming year looks to be an interesting one in the lithium space; a number of companies are rapidly approaching producer status, and Nemaska Lithium Inc. (TSX: NMX | OTCQX: NMKEF) ("Nemaska") is perhaps one of the entities closest to that title. When using the phrase "near-term", one must be able to see that a project is a matter of mere formality away from completion, and preferably with offtake agreements already in place. Nemaska partnered with Johnson Matthey Plc ("JM") in 2015 in a memorandum of understanding which stated that funding would be provided for the construction of a pilot plant in addition to a long term materials contract should Nemaska's product meet JM's stringent quality requirements, later formalised in a collaboration agreement in May 2016.

The companies announced at the end of last month that Johnson Matthey has released the final CAD$1,000,000 milestone payment following receipt and acceptance of a second shipment of 3.5t of lithium hydroxide from Nemaska. Both organisations confirmed that this shipment met Johnson Matthey's lithium hydroxide specifications and concluded the milestone payments from Johnson Matthey, with Nemaska Lithium having met all of the requirements set out in the collaboration agreement. Nemaska reports that the commissioning and start-up of the Phase 1 Plant to date has gone exceptionally well and the company has delivered battery grade lithium salts to Johnson Matthey exactly as promised.

Nemaska intends to supply both lithium hydroxide and carbonate to the booming lithium battery market. The ever-increasing demand for electric vehicles, mobile devices and other battery-dependent technologies is expected to create a shortfall in supply which would send prices through the roof. In fact, leading banks and analysts say that, by 2050, 81% of 132 million new auto sales each year will be electric, with each battery requiring around 63 kg of lithium (estimated content of a 70 kWh Tesla Model S battery pack).

Ahead of the construction of a full commercial processing facility, the Phase 1 plant will have an average combined capacity of 610 tonnes per year, but the mine plan and feasibility study state that, when in full swing, the site will produce 2,740 tonnes of ore per day over a mine-life of 26 years. Given that the company has repeatedly assayed lithium grades well in excess of 2%, we should expect to be seeing viable commercial production in the very near future using the company’s proprietary processing solution which eliminates the use of the expensive reagent, soda ash (sodium carbonate), from the flowsheet.

The process utilises electrolysis to replace soda ash since the material is subject to frequent price fluctuations which can disrupt the through-rate of any chemical processing operation. Being located in Quebec, the company can enjoy low-cost and dependable renewable energy, further lowering costs and strengthening the business case. To feed this process, the company is developing in Quebec one of the most promising spodumene lithium hard rock deposits in the world. The spodumene concentrate produced at the Whabouchi mine will be shipped to the processing plant to be built in Shawinigan, Quebec.

Nemaska recently announced drill results from Whabouchi the featured frequent occurrences of greater than 2% $Li_2O$, as well as occasional measurements of over 4%. With grades and volume as high as they are at Whabouchi, it’s looking incredibly likely that Nemaska will be able to make the leap to full-blown producer. Either way, the project is certainly near-term, and any bets should be placed sooner rather than later.

# Nemaska Lithium's Whabouchi project to ship lithium hydroxide in first quarter

Nemaska Lithium Inc. (TSX: NMX | OTCQX: NMKEF) is a producer of the compound in Quebec, Canada, and is aiming to supply to the rapidly growing market. The company wholly owns the Whabouchi Mine project, a deposit believed to rank second in the world for size and lithium concentration. The company has developed a commercial process of producing lithium hydroxide (patent pending), which is the compound anticipated to lead demand in batteries.

The Whabouchi project is the flagship of this company, but not only for its size and quality of material. Officially authorised by the Quebec and Canadian Federal Governments in 2015, the project is being funded by over $69 million in investment raised in an offering in July 2016, from when the company began trading on the Toronto Stock Exchange. The Company has previously ranked as "Top Company Overall" of the 2016 OTCQX® Best 50 and performed second best out of the mining sector on the 2016 TSX Venture 50®. Nemaska Lithium has further attracted a significant grant from Sustainable Development Technology Canada, receiving a second installment of $2.12 million in June. In September, new deposits were discovered at the Whabouchi project, leading to the decision to extend the drilling program from 13,700 meters to more than 17,000 meters. The project's most recent update confirmed in October that the Phase 1 Plant was proceeding according to budget and is on time, with respect to the primary shipments of their lithium hydroxide product. Maiden shipments is anticipated for the first quarter of 2017.

In April of this year a new feasibility report for the Whabouchi Mine was released as an update to their May 2014 report. The report estimated a savings on production costs of 22% and 18% for lithium hydroxide and lithium carbonate respectively. The updated report further took into account the significant rise in the price of lithium from the time the initial report was conducted two years ago, which led to the consultants doubling their estimate for after-tax net present value to $1.16 Billion. This report has not, however, considered the September discoveries, which should naturally lead to an even higher value for the project.

The Whabouchi Mine project has been headed up by a new Vice President of Operations who joined the company in August 2016, although his appointment was announced some months earlier. François Godin arrives with over 28 years experience in the Iron and Titanium department of Rio Tinto, where he has progressed to seniority through operations and optimization roles. At the height of his exploits with Rio Tinto, Godin began and developed a $1 billion project in Madagascar, commanding annual expenditure of $150 million. With so much investment making its way to Nemaska, and the Whabouchi Mine specifically set to become a dominating market force, Godin arrives with the background and experience to ensure that the project is in steady and capable hands.

As the business gears up to begin its initial product distribution in the New Year, Nemaska Lithium Inc.'s share price has performed impressively over the preceding 12 months, rising from $0.32 to $1.32. Before 2015 encroaches above $0.32 were rare, and the recent strong performance is most likely assisted by a combination of factors, not least of which being the ongoing and successful development at Whabouchi, successful rounds of capital investment, and the general appreciation of the lithium market. Nemaska Lithium therefore looks set to take a significant proportion of the growing demand which is current being faced with lethargic supply channels.

Nemaska Lithium has supply agreements with FMC to provide 8,000 tonnes per year of lithium carbonate, beginning from mid-2018. In addition the company has a multi-year supply agreement with Johnson Matthey Battery Materials.

---

# Nouveau Monde – A Corner of the Graphite Triangle

We guess it’s just the way of the world that the markets don’t seem to be able to “walk and chew gum at the same time”. As Lithium has grown in furore, its fellow traveler graphite has been somewhat eclipsed and investors have definitely forgotten that there is a relationship between the two as graphite is a big(ger) component in Lithium Ion batteries. With up to 150kg of graphite required for the LiB in an electric vehicle, new sources of graphite are in demand, specifically in North America where there is currently limited supply. Admittedly the price of graphite is lower than Lithium’s but that does not change the fact that graphite is a key part of the mix.

Like all things related to the mining space, trends come and go, and graphite lit up part of the darkest period of the mining slump for a brief while. There was the usual large inflow of players and then the gradual fade back to reality. The impetus for the initial rush was the lack of Western production of graphite, which was virtually nil. Two to three years on (depending on when you date the resurgence in graphite interest) the number of mines to have made it to production is almost negligible and the West is as much if not more dependent upon Chinese supply as before.

The fleeting nature of the graphite boomlet meant that many companies managed to raise a bit of money and a few companies managed to raise a lot, but the roll call of those still around and still with cash on the balance sheet is much reduced. Fortunately for those that survived the down times we are now seeing a revival in mining financing that is spilling out of first mover sub-sectors (like Lithium and Gold) into other metals/minerals now.

It is therefore worth looking at one of the survivors in the graphite space and highlight what it is doing, so a review of Nouveau Monde (TSXV:NOU)(OTC:NMGRF)(FRANKFURT:NM9) seems timely.

Our first encounter with this company was in October 2013 when we met with the CEO, Eric  Desaullniers on their London roadshow. The thing that struck us most was the quality of the share register, because when it comes down to it a quality shareholder base will more likely be around for the long-term than a mass of flippers or hedge funds. Currently the institutional base of Nouveau Monde consists of four of the major Quebec-based institutions with around 30% of the shares. As those in the mining space know the *Quebecois* look after their own and if the management is serious and the project is in the best interests of the province then the wagons are circled and support given through the down-times. This has proved to be the case with this company as the base is heavyweight indeed, with the names being:

- Desjardins – Largest association of credit unions in North America
- SIDEX – Major Québec Government fund to invest in Québec mineral exploration companies
- Fonds de Solidarite – FTQ – Québec’s largest central labor body
- SODEMEX – Québec-based mining investment fund

We would note again that these are NOT the type of institutions that invest in concept stories with no interest in moving to eventual production. The thing that clearly excites the local institutions is that Nouveau’s Matawinie project has the potential to take up the slack when North America’s only existing producing site, the Lac-des-Îles mine of Imerys, shuts down around 2020. This promises to keep Quebec in contention as the go-to place for this mineral in North America., Moreover we suspect they also want to be in the picture for industrial spin-off benefits such as battery plants which would make sense in view of the province’s endowment with Lithium and the likelihood of two major mines (one being Nemaska’s) being functional before the decades end.

The rundown of Imerys’s Lac-des-Îles mine is no secret as the company has disclosed that it is nearly depleted, with enough ore through 2020, with output varying between 20,000 to 25,000 tons per year, representing 95% to 100% of North American supply. At the risk of seeming like a body-snatcher, Nouveau Monde is plotting on moving into the space to be left with the soon-defunct Imerys operation and is designing its operation to produce 50,000 tons per year to enable the capacity to deliver large quantities, so effectively doubling North American supply.

This map above is what we like to call the Graphite Triangle. Unlike the Bermuda Triangle where things mysteriously disappear, the Graphite Triangle is where real projects in the graphite space appear. Matawinie’s proximity to Imerys’ processing plant on the outskirts of Montreal is patently obvious and with it the transport links to take the product to other North American locations or to Europe. This then begs the question as to whether Nouveau Monde might end up as a target for Imerys to plug their production pipeline’s “leak” post-2020?

**Conclusion**

With the stragglers in the Graphite space likely to be repurposed for other metals/minerals in the resurgent mining space the serious players will have a less crowded stage on which to perform… and it shall be all about performance. Nouveau in on the cusp of the DFS process which shall then lead into the funding and mine-build. It is fortunate that the sentiment amongst investors has turned to the better thus potentially making the funding task easier than it would have been over the last two years. With a capex of $122mn it is neither the cheapest mine to build nor is it the largest capex we have seen in the graphite space. With an NPV of over $400mn, it shows the type of strong multiple of NPV over capex that we like to see, and that makes it worthwhile for a project to "get out of bed in the morning".

The old real estate adage "Position, Position, Position" comes to mind when sorting the most likely winners from the also-rans. Nouveau definitely has itself well positioned in the Graphite Triangle of Quebec and that has brought it the support of major institutions with a vested interest in seeing the mining of graphite continue and expand in the province. Beyond that it ticks most of the boxes that Imerys would need to tick in hunting for a replacement for its current capacity in North America.

---

# Clausi on the lithium market and why Nemaska shares are

# heating up

The lithium market feels like the second act at a blues concert. Sure the first act was fun and new, and everyone had a jumpin' good time, but now we're about an hour in, some hairy guy is still wailing on the G harmonica, the beer is warm, the bass player is unenthusiastically thumping the same predictable bass line, and this song about a woman, a guitar and a broken heart sounds just like the last. It's time to go.

But then, just as you're getting up, you hear a new sound. You're curious, so you stay. And you're glad you did.

First, the lithium market. Lithium, a soft metal that reacts vigorously with water, is relatively mature compared to more obscure metals like praseodymium or holmium. (Where do they come up with those names?) Discovered first in Sweden in 1817, lithium has been used since the 1940's to treat mood disorders and for various industrial purposes.

This article from the United States Geologic Service provides a good overview of the domestic US market, both sources and uses, as well as a good global overview. Identified lithium resources in the United States total 5.5 million tons and approximately 34 million tons in other countries.

Batteries (for cell phones, laptops, handheld power tools), ceramics and glass, and lubricating grease are the top three uses, with supply and demand for lithium fairly evenly balanced out.

Numbers don't always tell the story. To see how mainstream lithium has become, go to any general retailer's website and enter "lithium" as a search word. Walmart's website gave me 93 items. At Canadian Tire I found 129 items, the majority of which related to handheld lithium-battery tools (drills, saws, nail guns, grass trimmers, replacement batteries and chargers). Over 150,000 items came back from Amazon, including cell phone batteries, nutritional products, tools, pet supplies and a megaphone.

There even are ETF’s, like the Solactive Global Lithium Index and the Global X Lithium ETF, that track the performance of listed companies active in lithium mining or the production of lithium batteries.

Since they are more mature industries, I strongly agree with Chris Ecclestone that lithium or graphite can’t count on Tesla Motors for a jumpstart. It will be up to each company in those spaces to develop its own brands, identities and efficiencies to survive – and Tesla will have its own fundamental problems to address.

That means intermission is over and the band is well into the second set. Cue the sweaty harmonica player. But then there’s that new sound so sit down again.

Nemaska Lithium (TSX:NMX | OTCQX:NMKEF) is that new sound.

Nemaska intends to become a supplier of lithium hydroxide and lithium carbonate. It is aiming at two links in the supply chain, one as a miner and one as a processor.

As a miner, Nemaska says by volume and grade it has one of the richest spodumene hard rock lithium deposits in the world, at its Whabouchi deposit in the James Bay Region. Whabouchi has year round access by a gravel road, and the local airport is only 18 km away.

Then Nemaska intends to be a processor. Nemaska claims to have proprietary methods to produce lithium hydroxide and lithium carbonate from its Whabouchi materials, and has applied for patents on those methods.

Pulling all of that together, in June 2014, Nemaska filed a NI 43-101 technical report / feasibility study on Whabouchi. This report, a comprehensive 350 pages, concluded that the deposit and associated processing plant were technically feasible and viable economically. The Costs and Economic Analysis run for about 40 pages, with the Base Case Evaluation Summary starting on page 327.

To make sure it has a buyer for the processed materials, Nemaska signed an offtake agreement for lithium hydroxide with Clariant Canada Inc., a private subsidiary of the financially healthy chemical giant Clariant AG ("CLN" on the Swiss Stock Exchange). Exposure to Tesla has been minimized.

Finally, the leadership team is diverse with extensive experience in mining and finance. A review of the press releases shows a team achieving a great deal in a short period of time, with considerable community engagement and capital markets success.

But what gives it that special sound, and worth sitting through the second set for, is the Sept 8 press release. Nemaska announced the signing of an agreement in principle with the City of Shawinigan to buy existing manufacturing facilities.

That Shawinigan facility will house Nemaska Lithium's Phase 1 plant and the future commercial Hydromet plant that will process the Whabouchi spodumene concentrate into high purity lithium hydroxide and lithium carbonate. Once the materials are processed, then the offtake agreement with Clariant can come into play.

This press release is vital for a number of reasons. First, Nemaska has built momentum by obtaining both Federal and Provincial support to go ahead with the construction of the Whabouchi mine and concentrator, and now obviously has support at the local level. Jobs will be created, taxes will be paid, translatable skills will be learned, the local population should grow. The importance of community-level support cannot be underestimated.

Second, Nemaska had originally planned to build the plant in Salaberry-de-Valleyfield, Quebec. Evolving the plan to use the Shawinigan facility means reduced construction time; significantly reduced capital costs; some of the requisite infrastructure, including natural gas, electric power station and a rail line, is already in place; and, Shawinigan is closer to the Whabouchi mine site than is the original site, which will reduce concentrate transportation costs.

It’s easy to just shrug and say “It’s just a building, so what?”. Being able to step into existing facilities is a massive “so what”. It means less money needs to be raised, less money needs to be spent, less distraction for management, less risk is taken in construction and less time is needed to get to production. Have you ever heard of a major construction project coming in ahead of schedule? Me neither. That’s why stepping into existing suitable facilities is so important.

All of that translates to less risk to the shareholders for roughly the same potential return. The business plan has been slingshot forward.

Risks still exist, of course. Nemaska will have to carry out several capital raises, by debt and equity, to execute on that business plan. With over 190M shares already outstanding, the shareholders need each equity financing to be priced at successively higher prices or face painful dilution.

But, with over $2.5M in the treasury as of March 15 and the company delivering on milestones, the stock price has been on a tear lately. More can be expected as the market digests this news and realizes that the band is just warming up.