

# Frontier Lithium Inc. Announces Positive Preliminary Feasibility Study for the PAK Lithium Project, Northwestern Ontario

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Sudbury, Ontario (FSCwire) - [Frontier Lithium Inc.](#) (TSXV: FL) (“Frontier” or “the Company”) pleased to release the results of a Preliminary Feasibility Study (“PFS”) for the PAK Lithium Project located approximately 175 kilometers north of Red Lake, Ontario. Included with this PFS is the announcement on the updated Mineral Resource Estimate for the PAK Lithium Project.

The results of the PFS (see tables 1-5 below) include a pre-tax net present value at a 8 percent discount rate of \$448 million with a pre-tax internal rate of return of 46.5 percent and a post-tax NPV at a 8 percent discount rate of \$301 million with post-tax IRR of 38.3 percent.

The PFS is based on an updated mineral resource estimate completed by Todd McCracken, P.Geo, outlined in the National Instrument 43-101 technical report update as reported in Table 6.

Highlights from the PFS, with the base-case premium technical grade lithium concentrate of 7.2% Li<sub>2</sub>O (TG\_SC7.2) price of \$1,250 (U.S.) per tonne, chemical grade lithium concentrate of 6.6% Li<sub>2</sub>O (CG\_SC6.6) price of \$750 (U.S.) per tonne and an exchange rate of \$1.25 USD/CAD, are as follows (all figures in Canadian dollars unless otherwise stated):

- Life of Mine Revenue is 1,859 million
- Pre-production Capital is \$147 million with a contingency of 10% included within the initial capital. Pre-production period is a 2 year period.
- Sustaining Capital \$37 million for the Life of Mine (“LOM”).
- Pre-tax NPV (8% discount rate) of \$448 million and internal rate of return of 46.5%.
- Post-tax NPV (8% discount rate) of \$301 million and internal rate of return of 38.3%.
- Pre-tax Cash Flow of \$1,013 million over 16 year LOM.
- Post-tax Cash Flow of \$700 million over 16 year LOM.
- Positive Cash-flow is realized in year 2 of production.
- 5.8 million tonnes of mill feed averaging a combined 2.00% Li<sub>2</sub>O.
- 11.5 year open pit operation, 4.5 year underground operation.
- Mill operates at average tonnage of 1,090 tonnes per day.
- Total production of 1.14 million tonnes of technical grade concentrate of 7.2% Li<sub>2</sub>O
- Total production of 115,500 tonnes of chemical grade concentrate of 6.6% Li<sub>2</sub>O

“The compelling PFS results display the PAK Lithium Project’s ability to firstly become a high margin, low-cost producer of a unique premium low-iron spodumene concentrate which is in very high demand by the global lithium market. In addition, an additional by-product output of chemical grade concentrate is produced which could also be further upgraded and refined for use in the lithium battery market” comments Trevor Walker, President and CEO of Frontier Lithium. “Despite the strong PFS results, I see room to further optimize the resource and engineering designs and have already transitioned to feasibility level work. This significant milestone also sets the path forward to strategically expand the resource, support ongoing lithium compound testwork, progress our discussions with potential offtake, as well as further

collaboration agreements with our neighboring First Nation communities."

Table 1

Production Profile	
Total Tonnes Milled	5.8 million
Diluted Head Grade	2.00% Li <sub>2</sub> O
Mine Life	16 years
Daily mill commercial throughput	1,090 tpd
Lithium Recovery	78.5%
Total TG Production (7.2% Li <sub>2</sub> O)	1.14 MT
Total CG Production (6.6% Li <sub>2</sub> O)	115,500 tonnes

Table 2

Economic Assumptions and Parameters	
Exchange Rate (USD/CAD)	\$1.25
Discount Rate	8%
TG_SC7.2 Price (USD)	\$1,250/tonne
CG_SC6.6 Price (USD)	\$750/tonne

Table 3

Project Economics	
Pre-Tax	
NPV (8% Discount Rate)	\$448 M
Internal Rate of Return	46.5%
Cumulative Cash Flow	\$1,013 M
Post-Tax	
NPV (8% Discount Rate)	\$301 M
Internal Rate of Return	38.3%
Cumulative Cash Flow	\$700 M

Table 4

Capital Requirements	\$ Million
Site Prep/ Infrastructure	45.6
Mill Processing	59.3
Power Distribution	6.4

Open Pit Equipment	12.9
Water treatment and waste management	9.5
Contingency	13.5
Total Pre-production Capital Cost	147.3
Total Sustaining Capital Cost	36.6

Table 5

Operating Costs	\$/tonne processed
Direct Open Pit Mining Cost	4.06
Direct Underground Mining Cost	84.07
Direct Processing Cost	18.01

Table 6 Updated 2018 Mineral Resource Calculation

Cut- off	Resource Category	Commodity	Geologic Zone	Tonnes (t)	Li <sub>2</sub> O (%)
0.4% Li <sub>2</sub> O <sub>eq</sub>	Measured	Lithium	Upper Intermediate Zone (UIZ)	324,720	3.95
		Lithium	Lower Intermediate Zone (LIZ)	920,330	1.72
		Lithium	Total Lithium Zone	1,245,050	2.30
		Lithium / Tantalum / Rubidium	Bulk Pegmatite	1,245,050	2.30
0.4% Li <sub>2</sub> O <sub>eq</sub>	Indicated	Lithium	Upper Intermediate Zone (UIZ)	333,200	3.23
		Lithium	Lower Intermediate Zone (LIZ)	5,909,500	1.89
		Lithium	Total Lithium Zone	6,242,700	1.96
		Tantalum / Rubidium	Central Intermediate Zone (CIZ)	1,011,300	0.80
		Lithium / Tantalum / Rubidium	Bulk Pegmatite	7,254,000	1.69
0.4% Li <sub>2</sub> O <sub>ew</sub>	Measured + Indicated	Lithium	Upper Intermediate Zone (UIZ)	657,920	3.59
		Lithium	Lower Intermediate Zone (LIZ)	6,829,830	1.87
		Lithium	Total Lithium Zone	7,487,750	2.02
		Tantalum / Rubidium	Central Intermediate Zone (CIZ)	1,011,300	0.80
		Lithium / Tantalum / Rubidium	Bulk Pegmatite	8,499,050	1.78
0.4% Li <sub>2</sub> O <sub>eq</sub>	Inferred	Lithium	Upper Intermediate Zone (UIZ)	13,000	3.56
		Lithium	Lower Intermediate Zone (LIZ)	1,819,000	2.09
		Lithium	Total Lithium Zone	1,832,000	2.10
		Tantalum /Rubidium	Central Intermediate Zone (CIZ)	85,000	1.16
		Lithium / Tantalum / Rubidium			

Bulk Pegmatite

1,917,000

2.01











Grand Total	Bulk Pegmatite	10,416,050	1.82
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1) For the sole purpose of this resource estimation, Li<sub>2</sub>O equivalent was determined based on lithium and tantalum grades and prices (\$400 per tonne of 6% spodumene concentrate and \$150 per kg of 30% tantalite concentrate) and their respective recovery ratio (78.5% recovery for lithium and a 50% recovery for tantalum from bulk pegmatite). No credit was included for rubidium, cesium or any of the other elements contained for the purpose of this estimate

2) Li<sub>2</sub>O content in the CIZ is predominantly associated with lithian micas and without metallurgical testing not deemed recoverable, therefore, not included in the Li<sub>2</sub>O contained and subsequently the Li<sub>2</sub>O equivalent calculation for the purpose of this report.

3) The UIZ and LIZ are technical/ceramic-grade lithium zones (high-grade lithium with low inherent iron (0.1% Fe<sub>2</sub>O<sub>3</sub> from whole rock analysis). The iron content of spodumene contained within the LIZ increases as the contact with iron-rich metasedimentary country rocks are approached, but it has been noted that a concentration below 0.1% wt.% Fe<sub>2</sub>O<sub>3</sub> is maintained to within about 1 meter of the pegmatite-metasediment contact.

4) Calculation is based on 6,307m of drilling in 32 holes with an average depth of 160m to a maximum depth of 360m vertical in the deposit, 294m of production drilling for 68 blast holes for the 300 tonne UIZ bulk sample in 2015, and 32 channels covering 216m at surface.

5) Mineral Resources are not Mineral Reserves having no demonstrated economic viability. Results are presented underground and in situ.

6) Measured, Indicated and Inferred Resources were evaluated from drill hole and channel sample results using a block model approach (krig interpolation) with Surpac software.

7) (Calculations used metric units (meters, tonnes and ppm). Results were rounded to reflect their estimated nature. Tonnes are rounded to reflect the accuracy of the estimation. Grades reported in percent were rounded to two decimals while grades reported in part per million (ppm) were rounded to the closest integer.

Table 7 Reserve Table

Reserve Category	Million Tonnes	Li <sub>2</sub> O%
Open Pit		
Proven	1.19	2.39
Probable	2.93	1.93
Sub total	4.12	2.06
Underground		
Probable	1.65	1.84
Total (OP+UG)	5.77	2.00

#### Due Diligence

The Mineral Resources for PAK Lithium Project disclosed in this news release have been estimated by Mr. Todd McCracken, P. Geo., an employee of WSP Canada Inc and independent of Frontier. By virtue of his education and relevant experience Mr. McCracken is "Qualified Person" for the purpose of National Instrument 43-101. The Mineral Resource has been classified in accordance with CIM Definition Standards for Mineral Resources and Mineral Reserves, (November 2014). Mr. McCracken, P. Geo., has read and approved the contents of this press release as it pertains to the disclosed Mineral Resource estimate.

## Qualified Persons and 43-101 Disclosure

Garth Drever, P.Geo, Vice President Exploration for [Frontier Lithium Inc.](#) is a Qualified Person as defined by NI 43-101 has reviewed and approved the contents of this news release. Mr. Drever has been involved with all aspects of the PAK Lithium project since 2013.

Todd McCracken, P.Geo, Principal, Manager & Mining, at WSP Canada is an independent Qualified Person as defined by National Instrument 43-101, and is responsible for the estimation of the PAK Lithium Project mineral resource. Mr. McCracken has reviewed and verified that the technical information contained herein is accurate and approves of the disclosure of same.

Johnny Canosa P.Eng., Sr. Mining Engineer for Nordmin Engineering Ltd., is an independent Qualified Person as defined by NI 43-101 and has reviewed and approved the contents of this news release. Mr. Canosa is responsible for Financial Analysis, Open Pit Mine Planning, Operating and Capital Costs.

Roy Levesque P.Eng., Sr. Mining Engineer for Nordmin Engineering Ltd., is an independent Qualified Person as defined by NI 43-101 and has reviewed and approved the contents of this news release. Mr. Levesque is responsible for Underground Mine Design, Mine Planning and Scheduling.

Kurt Boyko, P.Eng., Consulting Specialist - Mechanical for Nordmin Engineering Ltd., is an independent Qualified Person as defined by NI 43-101 and has reviewed and approved the contents of this news release. Mr. Boyko is responsible for process plan design.

## About Frontier Lithium Inc.

Frontier's goal is to become a low-cost, fully integrated lithium and tantalum producer through development of the PAK lithium deposit in Ontario, Canada. Frontier maintains a tight share structure with management ownership exceeding 30% of the Company. The initial target market is the glass-ceramic industry which consumes roughly one-third of global lithium supply and is currently faced with monopolistic conditions, coupled with major lithium producers increasingly directing output toward supporting battery manufacture.

Ceramic/glass customers prefer to source technical-grade (low-iron) spodumene concentrate in excess of 7% lithium oxide (Li<sub>2</sub>O), if available, to avoid lower grade petalite concentrates, or paying much higher prices for battery grade lithium compounds.

The PAK lithium deposit remains open in all directions and Company Management is working towards developing a viable operation. The Company is currently completing a pre-feasibility study to assess the economic viability and technical feasibility of producing lithium concentrates. Frontier's goal is to first establish a viable technical grade spodumene concentrate operation. A possible second stage of investment and longer term prospect is to further process a combination of some of PAK's output to produce the higher purity lithium compounds required for lithium battery technologies in the electrification of transportation and electric grid storage applications.

## About the PAK Lithium Project

The PAK Lithium Project lies close to the boundary between two geological sub-provinces of the western Superior geological province in northwestern Ontario and hosts a rare metals pegmatite deposit. The deposit is an LCT (lithium- cesium- tantalum) type pegmatite. These types of pegmatites have been the principal source of hard rock lithium, tantalum, rubidium and cesium ores mined in the world but there are comparatively few commercially-viable deposits.

Frontier is actively exploring its 100% owned project which contains the Pakeagama Lake pegmatite. The PAK deposit has a current Measured and Indicated Resource of 8.5 million tonnes of 1.78% Li<sub>2</sub>O and an Inferred Lithium Resource of 1.9 million tonnes of 2.01% Li<sub>2</sub>O which has a technical/ceramic grade spodumene with low inherent iron (below 0.1% Fe<sub>2</sub>O<sub>3</sub>).

The deposit now has a known 500m strike length with an estimated true width varying from 10m to 125m with a sub-vertical

orientation. The resource remains open to depth and along strike to the northwest and southeast.

#### Company Contact Information

Trevor R. Walker  
President & CEO  
2736 Belisle Drive Val Caron, ON. P3N 1B3 CANADA  
T. +001 705.897.7622  
F. +001 705.897.7618

#### Media Requests

Joseph Mansourian  
Manager, Investor Relations  
2736 Belisle Drive Val Caron, ON. P3N 1B3 CANADA  
T. +001 705.618.0070  
F. +001 705.897.7618

Additional information regarding Frontier Lithium is available on SEDAR at [www.sedar.com](http://www.sedar.com) under the Company's profile on its website at [www.frontierlithium.com](http://www.frontierlithium.com), including various pictures of ongoing work at the project.

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#### Forward-looking Statements

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