



ASX ANNOUNCEMENT



29 AUGUST 2017

EXCELLENT RESULTS FROM FURTHER METALLURGICAL TESTWORK AT AUTHIER

- Recoveries over 80% and concentrate grades greater than 6% Li₂O achieved
- Results to be incorporated in economic evaluation for Updated Pre-Feasibility Study
- Testing demonstrates benefit of removing waste dilution from the concentrator feed
- Dilution management plan to be incorporated into Updated Pre-Feasibility study

Highlights

Sayona Mining Limited (ASX: SYA) ("Sayona" or the "Company") is pleased to report the results from the second phase metallurgical testing program for the Authier lithium project. The results will be incorporated into the Update Pre-Feasibility Study ("UPFS").

The new results demonstrate the ability to produce concentrates grading higher than 6% Li₂O and at recoveries over 80% - see Table 1. This compares to the February 2017 Pre-Feasibility Study assumptions of 5.75% Li₂O and 80% for concentrate grades and recoveries, respectively.

Table 1 – Best Results from Phase 2 Metallurgical Testing Program (Full Results See Table 2)

Sample	Description	Concentrate Grade (%Li ₂ O)	Metallurgical Recovery (%)
F6	3rd - Cleaner Flotation Concentrate	6.53	80
	2nd - Cleaner Flotation Concentrate	6.32	83
	1st - Cleaner Flotation Concentrate	5.95	85
F8	3rd - Cleaner Flotation Concentrate	6.62	77
	2nd - Cleaner Flotation Concentrate	6.58	83
	1st - Cleaner Flotation Concentrate	6.31	85

The objective of the metallurgical testing was to improve the process recoveries and concentrate grades, and reduce processing operating costs.

The new testing included variations in feed grade, grind sizes, flotation residence times, modifications in reagent dosages, adjustments to the magnetic intensity, and assessing the impact of waste dilution on the results – see Table 2 for full results. The new metallurgical testing program was undertaken with a new representative sample of the Authier deposit from drill core. The new sample represents both the expected feed grade and representative mineralogy of the deposit over the life-of-mine.

The new results will be incorporated into the UPFS. In conjunction with the new JORC Mineral Resource and results of the geotechnical program, the Company expects to significantly enhance the value and return outcomes for the Authier project. The Company will then commence the Definitive Feasibility Study, and pilot scale metallurgical testing programs.

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Phase 2 Metallurgical Testing Program Overview

Following the completion of the 2017 Feasibility Study, the Company commissioned engineering consultants, DRA/Met-Chem, to review the test work and flow sheet proposed for the Authier project. Following the review, DRA/Met-Chem recommended a new testing program and compilation of a representative sample that didn't incorporate any wall-rock waste dilution like the Phase 1 metallurgical testing program for the PFS.

The objective of the Phase 2 metallurgical testing was to improve the overall recovery and grade of the project through optimisation of the flotation process, and reduce processing costs. The testing program was managed by DRA/Met-Chem and the test work was completed at SGS Lakefield.

The new metallurgical testing program was undertaken with a new representative sample of the Authier deposit from diamond drill core. The new sample represents the average grade and representative mineralogy of the deposit over the life-of-mine. The sample was collected from four diamond drill cores and totaled approximately 50 kilograms.

Pre-Feasibility Study Updates

The new results demonstrate the ability to produce concentrates grading significantly higher than 6% Li₂O and at recoveries over 80%. This compares to the February 2017 Pre-Feasibility Study assumptions of 5.75% Li₂O and 80% for concentrate grades and recoveries, respectively. The results and how they are expected to impact the UPFS flowsheet design and operating costs, include:

- Using higher intensity magnetic separation – 12 Gauss intensity versus PFS design of 5 Gauss to improve the removal of iron bearing silicates from the concentrate stream;
- Optimized number of flotation stages and residence times to reduce losses during the mica flotation stage and improve grade/recovery during the spodumene (the lithium mineral) flotation;
- Coarser ball mill grinding size – results in reduced lithium losses to slimes removal, lower grinding costs and improved handling characteristics for the final concentrate product; and
- New concentrate grade of 6% Li₂O and potentially improved recoveries for the financial model.

The results demonstrate that practical management of dilution in the mine and processing plant will be paramount to achieving the new metallurgical outcomes. The Company is completing a dilution study as part of the UPFS, and will develop plans for managing dilution through grade control drilling, blasting patterns and mining techniques.

The Company will further complete a number of new testing programs for the planned Definitive Feasibility Study. The new pilot metallurgical program will be completed by mining phase. Over the project life, the mining sequence will incorporate four key development phases. A sample plan to test each phase will be implemented to develop long-term schedules of the orebodies metallurgical characteristics. During years 1 to 5 in the mining sequence, the orebody exhibits much higher than life-of-mine average grades and spodumene crystal sizes. This is expected to deliver the better metallurgical recoveries and concentrate grades, and will have a positive impact on any discounted cash-flow analysis.

Results Summary

The following tests were undertaken to assessing metallurgical performance of low, high and representative grade samples at various grind sizes, and with and without dilution. Samples F1 to F4 were undertaken to assess metallurgical performance of low and high grade samples at various grind sizes. The results demonstrate that higher grade samples demonstrate superior metallurgical performance. Samples F5 to F8 tested the representative sample at various grind sizes with and without dilution.

Table 2 – Results of the Phase 2 Metallurgical Testing Program

Sample	Description	Concentrate Grade %Li2O	Metallurgical Recovery %
F1 – High-grade sample, 100% passing 150 microns	3 rd -Cleaner Flotation Concentrate	6.74	45.2
	2 nd -Cleaner Flotation Concentrate	6.69	74.2
	1 st -cleaner Flotation Concentrate	6.63	80.8
F2 – High-grade ore sample , 100% passing 180 microns	3 rd -Cleaner Flotation Concentrate	6.73	83
	2 nd -Cleaner Flotation Concentrate	6.64	85
	1 st -cleaner Flotation Concentrate	6.45	86
F3 – Low-grade sample, 100% passing 150 microns	3 rd -Cleaner Flotation Concentrate	5.52	66
	2 nd -Cleaner Flotation Concentrate	5.22	69
	1 st -cleaner Flotation Concentrate	4.76	71
F4 - Low-grade sample, 100% passing 150 microns	3 rd -Cleaner Flotation Concentrate	5.12	77
	2 nd -Cleaner Flotation Concentrate	4.81	80
	1 st -cleaner Flotation Concentrate	4.33	83
F5 - representative sample, 100% passing 150 microns, diluted 5%	3 rd -Cleaner Flotation Concentrate	5.41	80
	2 nd -Cleaner Flotation Concentrate	5.29	83
	1 st -cleaner Flotation Concentrate	4.98	86
F6 – representative sample, 100% passing 150 microns, undiluted	3rd -Cleaner Flotation Concentrate	6.53	80
	2nd -Cleaner Flotation Concentrate	6.32	83
	1st -cleaner Flotation Concentrate	5.95	85
F7 - representative sample, 100% passing 180 microns, diluted 5%.	3 rd -Cleaner Flotation Concentrate	5.50	70
	2 nd -Cleaner Flotation Concentrate	5.43	78
	1 st -cleaner Flotation Concentrate	5.28	83
F8 - representative sample, 100% passing 180 microns, undiluted.	3rd -Cleaner Flotation Concentrate	6.62	77
	2nd -Cleaner Flotation Concentrate	6.58	83
	1st -cleaner Flotation Concentrate	6.31	85

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Sayona Mining Limited is an Australian, ASX-listed (SYA), company focused on sourcing and developing the raw materials required to construct lithium-ion batteries for use in the rapidly growing new and green technology sectors.

The Company's primary focus is the development of the advanced stage Authier lithium project in Quebec, Canada. Authier mineralisation is hosted in a spodumene-bearing pegmatite intrusion with more than 22,000 metres of drilling in 139 holes. The Authier JORC (2012) compliant Ore Reserve and Mineral Resource estimates are tabulated below at a 0.45% Li₂O cut-off grade.

Authier JORC Ore Reserve Estimate (0.45% Li₂O cut-off grade)			
Category	Tonnes (Mt)	Grades (%Li₂O)	Contained Li₂O
Proven Reserve	4.9	0.97%	47,821
Probable Reserve	5.3	1.06%	55,904
Total Reserves	10.2	1.02%	103,725
Note: The Ore Reserve is based on the February 2017 Mineral Resource estimate and February 2017 Feasibility Study			

Authier JORC Mineral Resources Estimate (0.45% Li₂O cut-off grade)			
Category	Tonnes (Mt)	Grades (% Li₂O)	Contained Li₂O
Measured	5.62	1.01%	56,762
Indicated	9.57	1.03%	98,571
Inferred	2.21	0.99%	21,879
Total Resources	17.4	1.02%	177,212

Authier is amenable to simple open-cut mining and processing methods, and is situated in close proximity to development infrastructure. The Company is currently completing an updated Pre-feasibility Study, due for completion in 3Q0217, prior to the commencement of a Definitive Feasibility Study which is planned to be completed in early 2018.

In addition, the Company controls a portfolio of lithium and graphite exploration projects in Western Australia.

Reference to Previous ASX Releases

This document refers to the following previous ASX releases:

- "Expanded Authier JORC Resource", 14 June 2017
- Authier maiden JORC Ore Reserve estimate, 17 February 2017
- Authier Pre-Feasibility Study" 17 February 2017

The Company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcement and all material assumptions and technical parameters continue to apply and have not materially changed. The Company confirms that the form and context in which the Competent Person's findings are presented have not been materially modified from the original market announcements.