

21 June 2023

**STANDALONE LITHIUM CARBONATE PLANT NPV OF A\$3.2B AT NAL PRODUCES A  
COMBINED NAL NPV OF A\$5.4B**

**Highlights**

- **Positive preliminary technical study for lithium carbonate production at North American Lithium (NAL) operation in Québec, with fully integrated pre-tax NAL NPV now exceeding A\$5 billion, including NAL DFS (refer ASX release 14 April 2023)**
- **Standalone estimated pre-tax net present value (NPV) (8% discount) for lithium carbonate production of A\$3.2B (pre-tax); standalone carbonate plant pre-tax IRR of 60%**
- **Total earnings before interest, tax, depreciation, and amortisation (EBITDA) over 16-year project life for standalone carbonate plant of A\$7.5B, based on life of plant production of 372,000 tonnes lithium carbonate**
- **Sayona to advance definitive technical study for lithium carbonate plant's restart, targeting production as early as 2026, amid focus on North American supply chain for battery/EV sector.**

**North American lithium producer Sayona Mining Limited ("Sayona") (ASX:SYA; OTCQB:SYAXF)** announced today a positive preliminary carbonate technical study (preliminary study) for its flagship North American Lithium (NAL) Project in Québec, Canada, confirming the benefits of moving into downstream processing. NAL is a subsidiary of Sayona Québec, owned by Sayona (75%) and Piedmont Lithium (ASX:PLL 25%).

Study highlights included an estimated, pre-tax NPV (8% discount) for the standalone carbonate plant of A\$3.2 billion, with a pre-tax IRR of 60%. Total earnings before interest, tax, depreciation, and amortisation (EBITDA) over the 16-year project life of the carbonate plant amount to A\$7.5 billion (exchange rate C\$1 = A\$1.10, as at 20 June 2023).

Based on the positive study, Sayona now plans to commission a definitive technical study for the production of battery-grade lithium carbonate ( $\text{Li}_2\text{CO}_3$ ) from spodumene (lithium) concentrate. Subject to the study's timing and outcomes, the carbonate plant could be commissioned as early as 2026.

## LITHIUM CARBONATE STUDY - HIGHLIGHTS

**Table 1: Financial Analysis Summary**

Item	Unit	Value	
Plant Life	Year	16	
NAL Spodumene Purchased	Mt	2.9	
Carbonate Produced	Kt	372	
Revenue	Unit	Value (US\$)	Value (C\$)
Average Carbonate Selling Price	\$/t carb.	25,585	34,113
Exchange Rate	C\$:US\$	0.75	
Selling Cost			
Product Transport and Logistics Costs	\$/t carb.	100	134
Project Costs			
Fixed Opex <sup>1</sup>	\$/t carb.	422	562
Variable Opex	\$/t carb.	1,846	2,461
General and Administration (G&A)	\$/t carb.	55	73
NAL Spodumene Purchased <sup>2</sup>	\$/t carb.	9,200	12,266
Project Economics			
Gross Revenue	\$M	9,470	12,627
NAL Spodumene Purchased	\$M	3,422	4,563
Total Selling Cost Estimate	\$M	38	50
Total Operating Cost Estimate	\$M	844	1,125
Total Sustaining Capital Cost <sup>3</sup>	\$M	145	193
Undiscounted Pre-Tax Cash Flow	\$M	4,586	6,114
Discount Rate	%	8	8
Pre-tax NPV @ 8%	\$M	2,158	2,872
Pre-tax Internal Rate of Return (IRR)	%	60	60
After-tax NPV @ 8%	\$M	1,539	2,052
After-tax IRR	%	50	50
C1 Cash Costs	\$/t carb.	11,567	15,423
All-In Sustaining Costs <sup>4</sup>	\$/t carb.	11,997	15,996

**Notes:**

1. Fixed opex costs include total laboratory consumables and personnel costs divided by total carbonate production over the plant life and excludes sustaining capital (see note 3).
2. The average transfer price of spodumene concentrate between NAL concentrator and NAL downstream operations was C\$1,557 per tonne of spodumene concentrate on an SC6 equivalent basis.
3. Total sustaining capital cost includes total maintenance materials and contract labour costs of major maintenance events (e.g., annual shutdown maintenance) over the plant life.
4. All-In Sustaining Costs = Cash Costs + Sustaining Capital + Exploration expenses + G&A expenses.

Sayona’s Managing Director, Brett Lynch commented: *“This study shows the outstanding value we have generated from our strategy of acquiring a brownfields plant with existing assets. With an accelerated pathway to lithium carbonate production, we are rapidly advancing our goal of becoming a fully integrated producer of lithium chemicals.*

*“Significantly, NAL is set to become the only lithium operation with a concentrator and carbonate plant all on the same site in North America.*

*“Lithium demand continues to increase and the Canadian and US governments have clearly shown their intentions to develop a North American supply chain, from mining to processing and manufacturing.*

*“Québec has shown a clear vision of becoming a leader in this new industry, maximising the benefits of its sustainable hydropower, world-class infrastructure and proximity to key battery markets. A new lithium carbonate plant will make a significant contribution in creating a green and sustainable supply chain, delivering new jobs and investment for local communities, together with a low carbon footprint.*

*“Sayona now looks forward to advancing a definitive technical study for NAL and moving towards production as we deliver increasing value for all stakeholders.”*

Sayona acquired the NAL assets in 2021 in partnership with Piedmont Lithium. The site includes mining and concentrator facilities, a lithium carbonate process plant, and waste and tailings management facilities. The preliminary study scope included the modifications and upgrades to be made on the existing lithium carbonate plant to reach its nameplate throughput capacity.

## KEY RESULTS AND ASSUMPTIONS

The main design criteria for the plant are shown in Table 2 below.

**Table 2: Main Process Design Criteria Parameters for Lithium Carbonate Production**

Parameter	Unit	Value
Concentrate feed grade	wt% Li <sub>2</sub> O	6.0 <sup>1</sup>
Concentrate nominal production	ktpa dry	186
Lithium carbonate production	Tpa	23,610
Plant availability, overall	%	90
Process plant operating life	Y	16
Total lithium conversion	%	85.55

*Note 1: The design basis for the concentrate feed grade will change to 5.82% Li<sub>2</sub>O for the next phase of technical study to align with the NAL DFS study (see ASX announcement 14 April 2023)*

The preliminary study has shown that the hydrometallurgy section of the carbonate plant requires updating. Planned additions to the original NAL flowsheet include a sodium sulphate crystalliser and buffer tanks.

The pyrometallurgical section of the flowsheet identified that major upgrades are required, including the addition of a feed preheating system, a rotary calcine cooler, a ball mill, modifications to the acid mixing circuit, and the addition of an acid bake kiln to replace the existing acid reactor.

To confirm the scope, several test results were reviewed from test work completed between 2009 and 2019. During the preliminary study, new tests with the blended concentrate were completed for decrepitation / grinding / sulfation / acid baking and leaching steps. Further testing on the blended concentrate for the primary and secondary purification and filtration circuits is planned for early in the next phase of the project.

Because the plant restart includes the use of existing equipment and infrastructure that operated in past years, site visits were completed to define a CAPEX allowance for the equipment refurbishment. Estimated initial capital expenditures (CAPEX) are shown in Table 3 below. The capital cost estimate was completed to an AACE Class 4 level of accuracy, with a stated accuracy of -30% / +50%.

**Table 3: Summary of Project Capital Cost Estimate**

Project Cost	C\$ M
Direct Costs	310.0
Indirect Costs	106.9
Owners Cost	27.1
<b>Sub Total</b>	<b>444.0</b>
Contingency	111.0
<b>Final Project Costs</b>	<b>555.0</b>

Estimated operating expenditures (OPEX) costs are shown in Table 4 below. OPEX estimates were completed to a preliminary level of accuracy.

**Table 4 – OPEX costs**

Breakdown	Total Annual Cost C\$ '000	C\$/t Li <sub>2</sub> CO <sub>3</sub> <sup>1</sup>	% of Total Costs
<b>Fixed Cost<sup>2</sup></b>	28,274	1,197	32.7%
<b>Variable Cost</b>	58,059	2,460	67.3%
<b>Total Annual Operating Costs</b>	86,333	3,657	100.0%

Notes:

<sup>1</sup> Unit cost expressed at nameplate production capacity of lithium carbonate.

<sup>2</sup> Fixed cost includes general and administration, personnel, maintenance (materials and contract labour), and laboratory consumables costs.

In addition to the conversion costs above, the project financial model assumes a transfer of spodumene concentrate from NAL mining operations to NAL downstream operations based on market pricing.

Importantly, the preliminary study financial analysis has demonstrated that the carbonate plant is

financially robust. The NPV and IRR were calculated based on the production of carbonate with a plant life of 16 years.

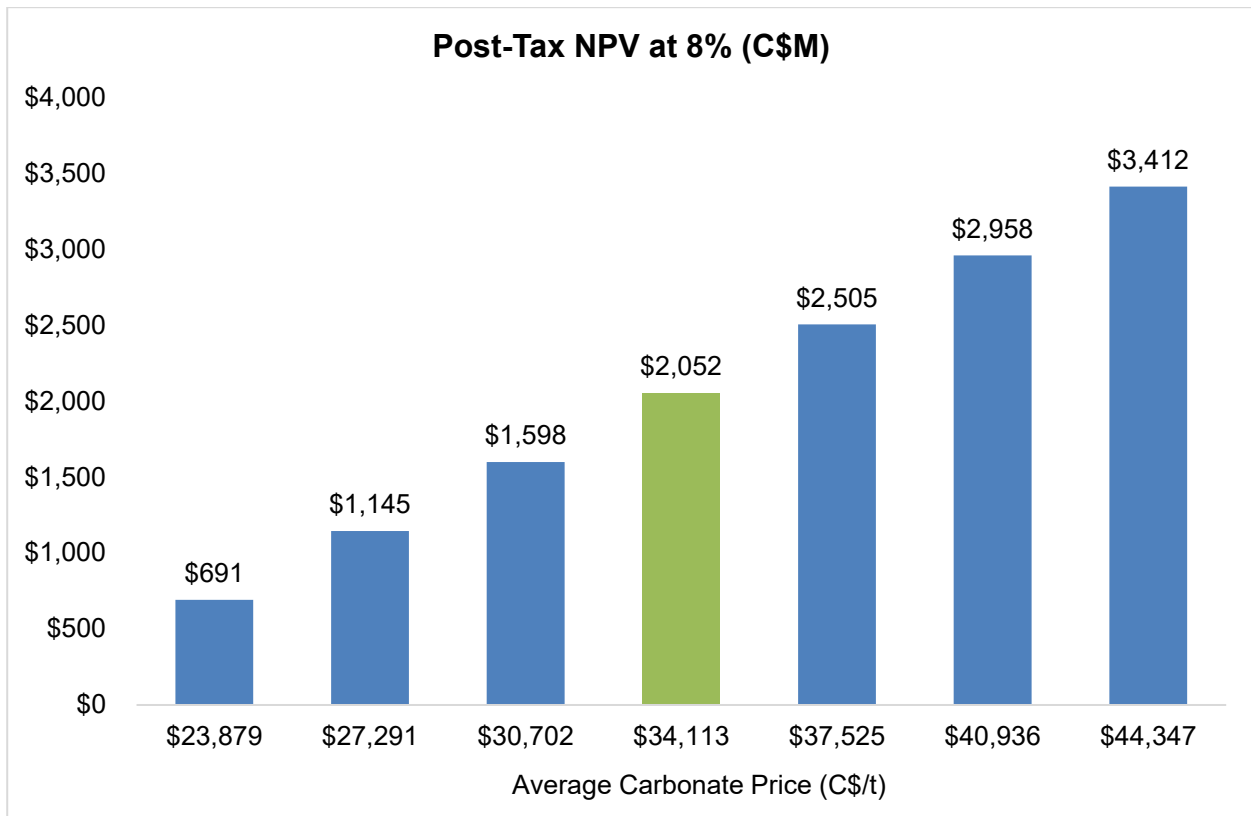
Table 5 below provides a summary of the financial analysis, which demonstrates that lithium carbonate production is economically viable. Key outcomes included an estimated pre-tax 100% equity carbonate plant NPV of C\$2,872 million (8% discount rate) and a pre-tax IRR of 60%.

Cash flow modelling demonstrates total earnings before interest, tax, depreciation, and amortisation (EBITDA) over the 16-year project life of the carbonate plant of C\$6,862 million. The cash flow model utilises real dollars and therefore does not factor any inflationary impacts on revenue, operating and capital costs and uses an industry standard 8% discount rate. Table 5 summarises the IRR.

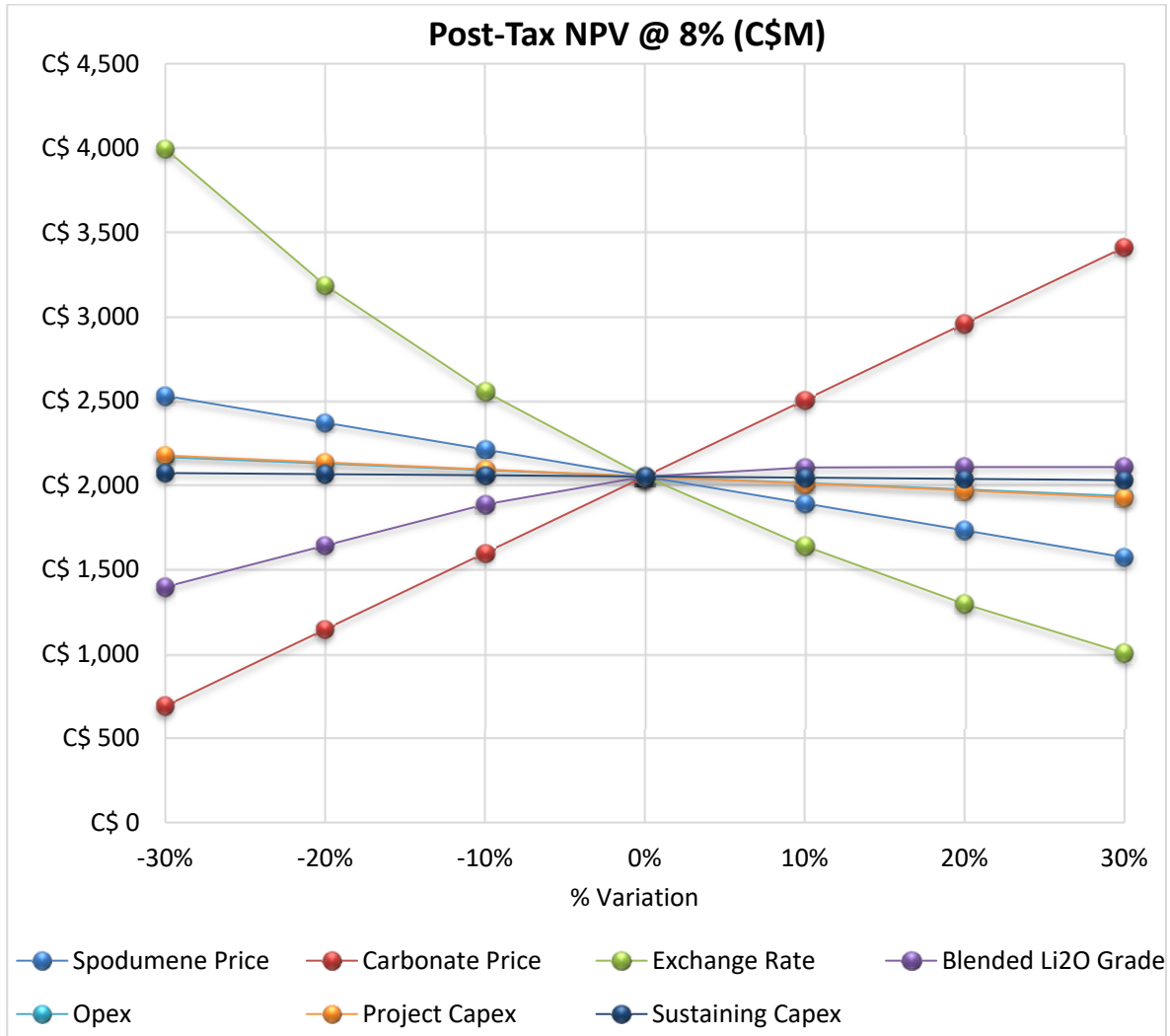
**Table 5: Cash Flow Modelling Summary**

<b>PRE-TAX</b>	
NPV @ 8% (C\$ M)	2,872
IRR	60%
<b>POST-TAX</b>	
NPV @ 8% (C\$ M)	2,052
IRR	50%

The results of the sensitivity analyses are detailed in Figure 1 and Figure 2 below. The key outcome is the sensitivity to the carbonate price which is greater than both OPEX and CAPEX.

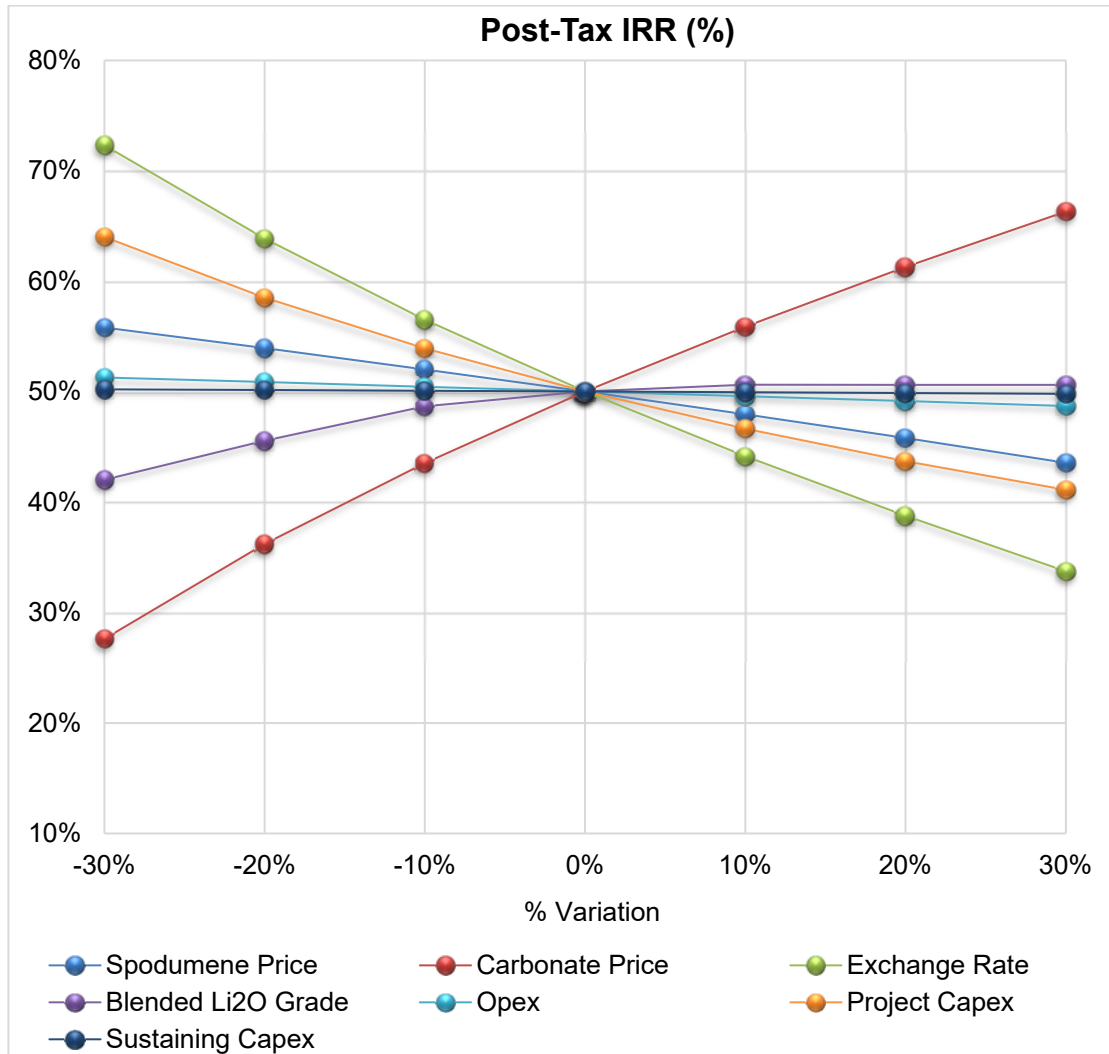


**Figure 1: Average Annual Carbonate Price Sensitivities**



**Figure 2: Preliminary study Sensitivity Analysis on NPV at 8%**

Post-tax NPV sensitivities range from -30% to +30% to show the impact of the NPV outputs at an 8% discount rate. Complementing the post-tax NPV sensitivities is the post-tax IRR graph shown in Figure 3, which shows the overall project impact at these sensitivity ranges. The post-tax sensitivity analysis shows that carbonate price and exchange rates have the largest NPV variation on the carbonate plant.



**Figure 3: Preliminary study Sensitivity Analysis on IRR**

### Environmental Assessment and Approvals

The current lithium carbonate plant at NAL has the necessary regulatory approvals and permits to produce approximately 20,000 tonnes per annum (tpa). A production increase will be subject to regulatory approval.

At the provincial level, permits have been obtained for lithium carbonate production and for certain project components. Some of the original permits were transferred to NAL following the acquisition of the site in 2017 and transferred to Sayona Québec following its acquisition of the operation in 2021.

However, as new facilities and infrastructure will be required for the lithium carbonate start-up, new authorisation modifications will be required from the Ministry of Environment and Fight Against Climate Change Wildlife and Parks (MELCCFP).

An update of the restoration plan with the Ministry of Natural Resources and Forestry (MRNF) will also be required to include the lithium carbonate plant expansion. Municipal permits will be needed for construction of the lithium carbonate plant. However, the Department of Fisheries and Oceans (DFO) authorisation obtained on 8 December 2022 will not require any modification.

### **Next steps**

Based on the positive results of the preliminary study and the financial analysis, Sayona Québec has decided to move forward with a definitive technical study for the restart of lithium chemicals production at NAL.

To achieve the development schedule as shown in the preliminary study, major equipment packages would need to be awarded early on to secure equipment delivery in line with the preliminary construction schedule to ensure potential commissioning in 2026, subject to the definitive technical study's timing and outcomes.

Issued on behalf of the Board.

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### **About Sayona Mining**

Sayona Mining Limited is a North American lithium producer (ASX:SYA; OTCQB:SYAXF), with projects in Québec, Canada and Western Australia.

In Québec, Sayona's assets comprise North American Lithium together with the Authier Lithium Project and its emerging Tansim Lithium Project, supported by a strategic partnership with American lithium developer Piedmont Lithium Inc. (Nasdaq:PLL; ASX:PLL). Sayona also holds a 60% stake in the Moblan Lithium Project in northern Québec.

In Western Australia, the Company holds a large tenement portfolio in the Pilbara region prospective for gold and lithium. Sayona is exploring for Hemi-style gold targets in the world-class Pilbara region, while its lithium projects are subject to a joint venture agreement with Morella Corporation (ASX:1MC).

For more information, please visit us at [www.sayonamining.com.au](http://www.sayonamining.com.au)



## **Forward Looking Statements**

The information contained in this announcement constitute “forward-looking statements” concerning Sayona.

Forward-looking statements contained in this announcement include, without limitation, those related to: (i) the nameplate capacity of the NAL plant, the concentrate and lithium carbonate nominal production rates, the expected carbonate plant availability, spodumene concentrate lithium grade and the expected lithium recoveries; (ii) the stated project finalisation date and dates associated with major equipment purchase orders and early works; (iii) the project and plant life; (iv) the reagent, utilities, consumables and labour costs that contribute to the operating cost; (v) the average lithium carbonate selling price and exchange rate; (vi) the on-time availability of key equipment and (vii) the availability of power and natural gas to meet design rates; (viii) the estimated NPV, IRR and EBITDA of NAL; (ix) Sayona’s intent to become a fully integrated producer of lithium chemicals.

Forward-looking statements are based on expectations, intentions, beliefs, estimates, outlooks, analyses and projections as of the time of this announcement. Forward-looking statements are necessarily based upon a number of estimates and assumptions that, while considered reasonable as of the time of such statements, are inherently subject to significant business, operational, economic, political, social and competitive uncertainties and contingencies. Many factors could cause Sayona’s actual results to differ materially from those expressed or implied in any forward-looking statement provided by Sayona or on behalf of Sayona.

By their nature, forward-looking statements involve risks and uncertainties because they relate to future matters, and risks exist that estimates, forecasts, projections and other forward-looking statements will not be achieved or that assumptions do not reflect future experience. Forward-looking statements are provided for the purpose of providing information about management’s expectations and plans relating to the future. Sayona cautions the reader not to place undue reliance on forward-looking statements. Sayona disclaims any intention or obligation to update or revise any forward-looking statements or to explain any material difference between subsequent actual events and such forward-looking statements, except to the extent required by applicable law.

## **References to Previous ASX Releases**

- Quarterly Activities/Appendix 5B Cash Flow Report – 28 April 2023
- DFS confirms NAL value with A\$2.2B NPV – 14 April 2023

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.