

# SAL DE VIDA DEVELOPMENT PLAN

## A globally competitive, highly profitable tier 1 lithium brine project

Galaxy Resources Limited (ASX: GXY, "Galaxy" or the "Company") is leveraging its portfolio of world-class development assets to create a sustainable, large scale, global lithium chemicals business. Galaxy advises the completion of the 2021 Feasibility Update for its wholly owned, Sal de Vida Brine Project ("Sal de Vida" or the "Project") located in Catamarca Province, Argentina. With achievement of this milestone, Galaxy will continue to advance the Project and move into the detailed design and construction phase.

#### PROJECT HIGHLIGHTS

#### **Project Summary**

- Front-end engineering design completed and confirms lowest quartile capital intensity and operating costs
- Updated Brine Resource Estimate of 6.2 million tonnes ("Mt") lithium carbonate equivalent
- Brine Reserve Estimate of 1.3Mt lithium carbonate equivalent supporting a 44-year project life based on reserves only
- Targeting production of ~32,000 tonnes per annum ("tpa") of battery-grade lithium carbonate ("LC") in three stages
- Staged development approach adopted to reduce development capital risk and utilise surplus cashflow from Stage 1 for later stages

#### Stage 1

- Production capacity for Stage 1 is 10,700 tpa LC with 80% at battery grade quality
- Development capital cost estimate of US\$153 million and cash operating costs of US\$3,500 per tonne LC
- Operating costs in the lowest cost quartile confirms the robustness of Galaxy's simplified flowsheet
- Pre-tax Net Present Value ("NPV") of US\$809 million at an 8% discount rate & pre-tax Internal Rate of Return ("IRR") of 43%
- Payback period of under 2 years from the start of commercial production

#### Expansion Stages 2 and 3

- Prefeasibility study completed for a two staged expansion with the design basis a replication of Stage 1
- First expansion scheduled to commence immediately after Stage 1 Project milestones are achieved
- Development capital of US\$466 million and cash operating costs of US\$3,352 per tonne LC for all three stages
- Pre-tax NPV of US\$2.1billion and pre-tax IRR of 43% for all three stages

#### **Execution strategy**

- Cash on hand and liquid investments of US\$217 million at 31 March 2021 and positive cashflow from Mt Cattlin provides full funding for Sal de Vida Stage 1
- 2021 execution activities to focus on detailed design of the plant and pond construction
- Targeting first production in late 2022 and commencement of Stage 2 design to occur in parallel to Stage 1 ramp up

## Chief Executive Officer, Simon Hay commented

"Completion of the feasibility study marks a major milestone in the development of Sal de Vida. Technical and financial outcomes are very positive and confirm that Sal de Vida will be a globally competitive, low cost producer of battery grade lithium carbonate. The Company's staged development approach provides a lower risk pathway to a large-scale operation again with compelling financial outcomes.

The quality of the Hombre Muerto salar is further reinforced by the current wellfield drilling campaign and we are excited about the potential upside that higher lithium brine grades will bring to the project. This will be quantified across the next two quarters and the market will be updated when drilling concludes and project physicals have been remodelled.



The project team will now move into the next phase with detailed engineering to commence on the plant and construction of the ponds commencing immediately. We remain on schedule for first production in late 2022 although COVID-19 continues to present significant challenges to the team and remains a risk to the project schedule."

## PROJECT BACKGROUND

Galaxy is developing the Sal de Vida Project in Catamarca Province on the Salar del Hombre Muerto, approximately 1,400km northwest of Buenos Aires, Argentina. The Sal de Vida deposit lies within the "lithium triangle", an area encompassing Chile, Bolivia and Argentina that contains a significant portion of the world's estimated lithium resources (Figure 1). Catamarca is a proven mining jurisdiction, home to several successful mining operations and development projects such as Livent Corp and Minera Alumbrera.

Galaxy is de-risking the development of Sal de Vida by adopting a simplified flowsheet, utilising mature technology and by staging development to reduce project risk and allow cash flow from Stage 1 to fund later stages.

The 2021 Feasibility Study focuses on Stage 1, which includes brine extraction, evaporation and processing operations onsite to produce 10,700 tpa of high-grade LC. The layout and development plan for Stage 1 allows for future expansion for subsequent stages.

A pre-feasibility study ("PFS") has been completed on a two staged expansion of the project with an increase of 10,700 tpa LC for each stage. The staged approach utilises the same basis of design as Stage 1 with project integration planning and detailed engineering to commence immediately after Stage 1 milestones are achieved.

A number of experienced engineering and consulting firms were engaged by the Company to assist in the completion of the Feasibility Study and Technical Report in accordance with the Canadian National Instrument 43-101 Standards of Disclosure for Mineral Projects. Stage 1 engineering has now reached a level of accuracy that is equivalent to the Association for the Advancement of Cost Engineering (ACCE) Class 3 for the wellfield and ponds; and Class 4 for the plant design.



Figure 1: Sal de Vida project location

## **GEOLOGY & MINERALISATION**

The salar system in the Hombre Muerto basin is considered to be typical of a mature salar. Several salars in the lithium triangle contain relatively high concentrations of lithium brine due to the presence of lithium-bearing rocks and local geothermal waters associated with Andean volcanic activity. Such systems commonly have a large halite core with brine as the main aquifer fluid in at least the centre and lower parts of the aquifer system.

Sal de Vida's brine chemistry has a high lithium grade, low levels of magnesium, calcium and boron impurities and readily upgrades to battery grade lithium carbonate. Long-term hydrological pump testing under operating conditions has demonstrated excellent brine extraction and aquifer recharge rates to support the production design basis.

Galaxy plans to undertake further exploration drilling to test the depth of the basin on the western side of the salar in addition to its current production wellfield drilling program. A revised Resource & Reserve estimate is expected in Q3 2021 after completion of the current drilling program and significant exploration upside remains in the basin with various previous drill holes open at depth.

#### RESOURCE AND RESERVE ESTIMATE

The production wellfield drilling program commenced in late 2020 to construct an additional eight wells in the eastern region of the salar for Stage 1 brine production and to explore the resource at depth. By early 2021, two production wells were completed, providing further exploration and aquifer testing data on the hydrogeological settings of the salar. Average lithium grades of 933 mg/L were achieved across



the wells and results from depth extension drilling increased depth of the basement model and the size of the brine aquifer. This contributed to a 27% resource increase and 13% reserve increase as announced separately on 14 April 2021.

The revised Brine Resource Estimate of 6.2Mt LCE and Brine Reserve estimate of 1.3Mt LCE are detailed in Tables 1 and 2.

#### **Brine Resource Estimate**

Table 1: Sal de Vida Resource Estimate at April 2021

Category	Brine Volume (m³)	Average Li (mg/l)	In Situ Li (tonnes)	Li₂CO₃ Equivalent (tonnes)
Measured	4.9 x 10 <sup>8</sup>	759	369,000	1,964,000
Indicated	6.8 x 10 <sup>8</sup>	717	485,000	2,583,000
Measured & Indicated	1.2 x 10 <sup>9</sup>	735	854,000	4,547,000
Inferred	3.9 x 10 <sup>8</sup>	811	316,000	1,684,000
Total	1.6 x 10 <sup>9</sup>	754	1,170,000	6,231,000

Note: Cut-off grade: 500 mg/L lithium. The reader is cautioned that mineral resources are not mineral reserves and do not have demonstrated economic viability. Values are inclusive of Reserve estimates, and not "in addition to".

#### **Brine Reserve Estimate**

Table 2: Sal de Vida Reserve Estimate at April 2021

Category	Time	Li Total Mass	Li <sub>2</sub> CO <sub>3</sub>
	Period		Equivalent
	(years)	(tonnes)	(tonnes)
Proven	1-10	36,559	194,595
Probable	7-44	205,839	1,095,635
Total	44	242,397	1,290,229

Note: Assumes 500 mg/L Li cut-off, 68.7% Li process recovery.

Model simulations estimate the average lithium grade at the commencement of production to be approximately 810 mg/L of lithium from the eastern wellfield. As demonstrated in Figure 2, the average lithium grade is projected to be in excess of 600 mg/L of lithium in the eastern wellfield after 40 years of simulated production from each well, demonstrating the excellent quality and size of the aguifer.

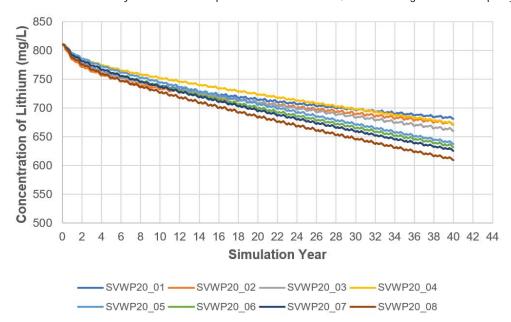


Figure 2: Projected lithium grades from the East Wellfield during project life



## BRINE EXTRACTION AND PROCESSING

Front-end engineering design ("**FEED**") work for Stage 1's wellfields to process plant and non-process infrastructure has been completed. A summary of the key physicals is displayed in Table 3.

Table 3: Stage 1 - Summary of physicals for a 44-year project life

Key Physicals	UoM	Value
Lithium Carbonate Produced (Stage 1) life of mine	t LC	428,600
Lithium Carbonate Produced (Stage 1 annual average)	t LC	10,700
Pond grade feed into process plant	Wt % Li	1.7
Pond Recovery	%	84
Plant Recovery	%	81
Average Product grade <sup>1</sup>	% Li <sub>2</sub> CO <sub>3</sub>	99.7

<sup>&</sup>lt;sup>1</sup> Product mix entails 80% battery grade, 10% technical grade and 10% primary grade

The process commences with brine extracted from wells extending to a depth of up to 280m in the salar. Brine will be pumped to a series of evaporation ponds, where it will be evaporated and processed at the onsite lithium carbonate plant. Project facilities are divided into four main areas including wellfield and brine distribution, evaporation ponds, the lithium carbonate plant and discard stockpiles. The process flowsheet is described below and summarised in Figure 3.

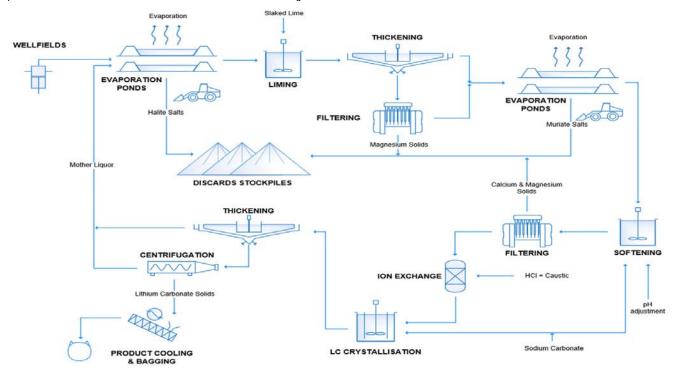


Figure 3: Sal de Vida simplified process flow sheet

## Wellfield and brine distribution

Nine wells will be available for Stage 1, of which seven wells will be operational during the maximum brine pumping season, and two will be on stand-by. Wellfield drilling commenced in late 2020 and to date two production wells have been installed successfully with the remainder scheduled for completion by year end.

All wells will be connected through pipelines to a booster station that will be situated in a central location to the wellfield. The average flow from the brine wells to the first evaporation ponds will be approximately 110 litres per second ("L/s").



#### **Evaporation ponds**

The first process step will consist of pumping brine into the ponds followed by concentration of lithium brine through evaporation. The evaporation area of 284 hectares ("ha") for Stage 1 was determined based on the expected evaporation rates from halite and muriate ponds, the well flow rates and required production rate.

#### Liming

The buffer ponds will feed evaporated brine to the liming stage to partially remove magnesium. A solution of milk-of-lime will be added to the brine inside mixing tanks, precipitating magnesium and removing other impurities such as boron and sulphates. The solids will be separated from the brine and pumped to a discard facility. The limed brine will be fed to another series of evaporation ponds and will be further concentrated. These concentrated brine storage ponds act as buffer ponds before the process plant, to accommodate seasonal flow variations and provide consistent feed to the process plant.

## Lithium carbonate plant

The lithium carbonate plant for Stage 1 is designed to produce 10,700 tpa of high-grade lithium carbonate based on an average brine supply to softening of 17 m<sup>3</sup>/hr, and an average lithium concentration of 21 g/L. The plant will operate continuously with a design availability of 91%.

#### Softening

Brine from the concentrated brine storage ponds will re-enter the process plant in the softening stage to further remove magnesium and calcium. The brine will be heated and sent to a series of six softening and mixing tanks to allow the brine to react with all reagents. The reagents will enable the precipitation of magnesium hydroxide, magnesium carbonate and calcium carbonate, as solids within the brine. Press filters and polish filters will separate the liquid brine and precipitated solids to remove all solid contaminants. The lithium-concentrated brine will then be sent to storage tanks to feed the crystallisation stage. Solid contaminants will be sent to a filter cake tank to be re-pulped with the liming discards before reporting to the discard facility.

#### Ion Exchange

Softened brine will report to a typical ion exchange ("IX)" circuit feed tank to remove the remaining calcium and magnesium ions and meet battery grade specifications. Hydrochloric acid will be used for stripping and sodium hydroxide or water will be used for regeneration of the IX resin.

## Crystallisation

Lithium-concentrated brine from the IX stage will be combined with sodium carbonate at elevated temperatures to produce lithium carbonate. The heated brine will feed a group of four crystallisation mixing tanks that will operate in series, precipitating lithium carbonate as a solid inside the solution. The solution will feed a thickener then a crystallisation cyclone cluster, to further remove liquid from the final product. The lithium carbonate solids will be recovered while the liquor will be recycled back into the process.

The bagging/packing stage will consist of a hollow screw conveyor that will reduce the temperature of the final product and will feed a product storage bin before final packaging.

## Salt waste disposal

During the evaporation phase the buildup of solid sodium chloride, magnesium, boron and sulphates will occur in the ponds. Over time the solids will build to a level where their removal is required to maintain a working liquid volume within the ponds. All ponds will be harvested on average once per year with the solids placed in storage facilities adjacent to the ponds. The estimated annual total amount of salt harvested and stockpiled from the halite ponds is 975,000 tpa, and from the muriate ponds is 96,000 tpa. The salt disposal facility covers ~267 ha and will consist of halite, muriate, and co-disposal stockpiles surrounding the halite ponds. All salt waste is of similar chemistry to the surrounding salar and no adverse environmental impacts are expected.

From year two of production onward, both liquid and solid wastes from the process plant will be mixed in a tank located near the production plant and will be sent as a pulp to the co-disposal area. This setup will operate for the remainder of the Project life. Some halite salts will be stockpiled separately to be used as construction material for future evaporation ponds, further reprocessing or sold as a by-product.

The infrastructure in the salt waste stockpile and co-disposal areas will consist of:

- Access roads to each stockpile and co-disposal area, accessible by trucks and light vehicles; and
- Containment system such as low-height berms, for any liquids that may permeate from the salt stockpiles.



#### **Final Product**

Galaxy has been internally developing a simplified evaporation flowsheet for the Sal de Vida Project. Over the past 12 months test work and piloting on site have steadily and successfully improved product quality to battery grade specifications. Technical analysis of piloting has been verified independently by the Minerals business unit of the Australian Nuclear Science and Technology Organisation's ("ANSTO") facility in Sydney, Australia.

As announced on 25 March 2021, Galaxy will produce battery grade lithium carbonate at Sal de Vida<sup>1</sup>. Results and process development activities with ANSTO have revealed that battery grade can be achieved with the addition of an ion-exchange step at the end of the flowsheet. This was seamlessly incorporated into Stage 1 with an insignificant impact on capital and operating costs and no interruption to project schedule. Project economics are based on a production and sales volume mix comprising 80% battery grade, 10% technical grade and 10% primary grade material. The operating intention is to maximise the production of battery grade however the 20% allowance for lower grade products is a prudent approach at this stage of the development.

## SITE LAYOUT & INFRASTRUCTURE

The Project's tenements cover 26,253 ha and all process facilities will be located in the southeastern sector of the Salar del Hombre Muerto. The wellfield for Stage 1 will be located directly above the eastern sub-basin of the Salar del Hombre Muerto over the salt pan, as seen in Figure 4.

The brine distribution system will traverse the salar southward to where the evaporation ponds will be located. The location of the ponds has been determined based on a number of a factors including optimal constructability properties and minimising earthworks, environmental impact and risk of flooding.

The processing plant for all stages will be located adjacent to Stage 1's evaporation ponds. A road system, including ramps and causeways, will connect the processing facilities and provide access to all working areas.

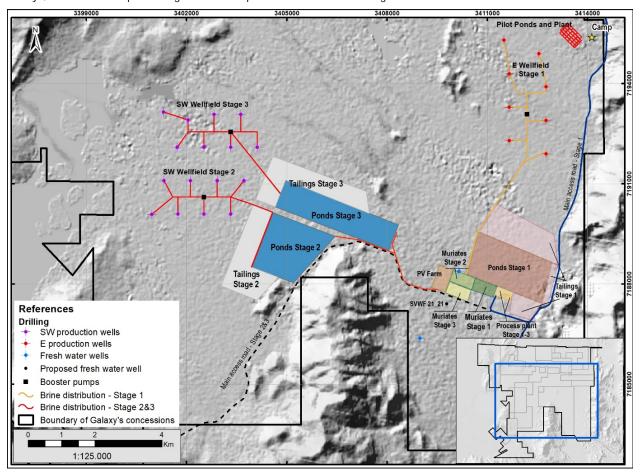


Figure 4: Sal de Vida site layout

<sup>&</sup>lt;sup>1</sup> For further information refer to the ASX announcement titled, 'Sal de Vida to adopt production of battery grade,' released on 25 March 2021



#### Supporting Infrastructure & Logistics

The following main facilities are planned for the Project:

- Raw water system
- Power generation and distribution
- Fuel storage and dispensing
- Camp to accommodate up to 300 people
- Sewage treatment plant
- Fire protection system

- Buildings for the process plant, reagent and product storage
- Various buildings for administration & site services
- Site roads, causeways, and river crossings
- Communications & mobile equipment
- Steam generation & compressed air

Galaxy commenced early construction in late 2020, upgrading the accommodation camp and constructing key roads to the main process areas. The Project is also serviced by key infrastructure including major roads, rail, air and multiple seaports in Argentina and Chile.

The main route to the Project site is from the city of Catamarca via national route 40 to Belen, then provincial route 43 through Antofagasta de la Sierra to the Salar del Hombre Muerto. The road is mostly paved to Antofagasta de la Sierra and continues unpaved for the last 145 km to Salar del Hombre Muerto. This road is well maintained and also serves Livent Corporation's Fenix lithium operations and Galan Lithium Ltd.'s Hombre Muerto Project.

The Ferrocarril Belgrano railway line is located 100 km to the north of the Project and the use of rail during later Project stages is a possibility. A public airstrip is located in Antofagasta de La Sierra and a private airstrip is located at Livent's Salar del Hombre Muerto operations.

Site generated power has initially been selected as the closest power line is located 140 km away to the Project. Galaxy is targeting at least 50% of renewable energy for Stage 2 via a solar farm. A completed energy study has allowed the Project to commence the procurement for engineering of the base case (including site distribution) plus photovoltaic generation, to replace generators, when available. Natural gas is also an option to replace diesel for baseload power generation.

International cargo for Sal de Vida could use a combination of ports in Buenos Aires, Argentina and Chile. The Ports of Antofagasta and Angamos consist of deep-water port facilities serving the mining industry in northern Chile. The Ports of Rosario, Campana and Buenos Aires consist of large port facilities serving multiple industries in Argentina's main economic hubs.

#### FINANCIAL METRICS

## **Development Capital and Operating Costs**

The total initial project development capital expenditure ("CAPEX") is estimated to be US\$153 million for Stage 1. The estimate includes wellfields to ponds, the lithium carbonate plant, non-process infrastructure and various indirect costs detailed in Table 4.

Operating expenditure ("OPEX") is estimated to be US\$3,500 per tonne LC for Stage 1. The OPEX is predominately made up of reagents and also includes labour, fuel, transport and royalties as detailed in Table 4.

**Table 4: Development Capital and Operating Cost Estimates** 

Development Capital Costs			
	US\$ Million	%	
Direct			
Wellfield & Brine Distribution	7	5	
Evaporation Ponds & Waste	40	26	
Lithium Carbonate Plant	38	25	
Utilities	13	8	
Infrastructure	7	5	
Total Direct CAPEX	104	68	
Indirect			
General	8	5	
Owners Cost	11	7	
Engineering	15	10	
Contingency	15	10	
Total Indirect CAPEX	49	32	
Total CAPEX	153	100	

Operating Costs	
popularing cooks	US\$/tonne LC
Reagents	1,519
Labour	532
Fuel	702
General	277
Consumables & Materials	300
Transport & Port	152
Royalties & Incentives	19
TOTAL OPEX	3,500
Minerally and a second	

Minor discrepancies may occur due to rounding

Project Economics

Minor discrepancies may occur due to rounding



An economic analysis was undertaken using the discounted cash flow method and was based on the data and assumptions for capital and operating costs detailed in this report. The evaluation was undertaken on a 100% equity basis.

Forecast battery grade and technical grade lithium carbonate pricing was provided by Benchmark Minerals Intelligence as at the end of Q1 2021. Primary grade pricing is assumed at a discount of US\$1,510 /tonne LC from technical grade.

The key assumptions and results of the economic evaluation are displayed in Tables 5 and 6 below.

Table 5: Key assumptions utilised in the project economics

Assumption	Units	Stage 1
Project Life Estimate	Years	44
Discount Rate (real)	%	8
Royalties and other Taxes <sup>1,2</sup>	%	5.6%
Corporate Tax <sup>2</sup>	%	25
Annual Production <sup>3</sup>	t LC	10,700
CAPEX	US\$M	153
OPEX	US\$/ tonne LC	3,500
Average Selling Price <sup>3</sup>	US\$/ tonne LC	11,933
Exchange rate	USD:ARS	1: 90

<sup>&</sup>lt;sup>1</sup> Standard Argentinian export tax, tax debits and credits and provincial royalty rate. This is then offset by 5.5% export incentives

Table 6: Summary of financials over a 44-year project life

Financial Summary	Units	Stage 1
NPV (Pre-tax)	US\$M	809
NPV (Post-tax)	US\$M	619
IRR (Pre-tax)	%	43
IRR (Post-tax)	%	40
Payback Period <sup>1</sup>	Years	2
Development Capital Intensity	US\$ / tpa LC	14,318
Pre-tax NPV: CAPEX	X: 1	5.3

<sup>1</sup> payback period is from date of first commercial production

#### Sensitivity Analysis

As displayed in Table 6, the feasibility demonstrates strong financial outcomes with a Pre-tax NPV<sub>8% real</sub> of US\$809 million and pre-tax IRR of 43%. Figure 5 analyses the impact on pre-tax NPV when pricing, operating cash costs and development CAPEX fluctuate between +/-30 %.

Figure 5: NPV Sensitivity Analysis





<sup>&</sup>lt;sup>2</sup> There is a risk that the Argentina Government may, from time to time, adjust Corporate tax rates, export duties and incentives that could impact the Project economics

<sup>&</sup>lt;sup>3</sup> Based on 80% battery grade, 10% technical grade and 10% primary grade lithium carbonate of annual production

<sup>&</sup>lt;sup>4</sup> Based on price forecast provided from Benchmark Minerals Intelligence and targeted production grades stated in Footnote 3 above

#### **Funding**

At 31 March 2021, Galaxy had US\$217 million in cash and liquid investments available to fully fund the development of Sal de Vida Stage 1 after the successful A\$161 million equity raising in November 2020. Galaxy expects to generate strong positive cash flows from Mt Cattlin over the life of mine with the recent strengthening in lithium prices. Negotiations have commenced with BNP and other banks to increase the size of the existing undrawn debt facility and extend the repayment date. Cashflow generation from Mt Cattlin and Sal de Vida Stage 1 will assist in funding development of Stages 2 and 3.

The Argentine Government has recently announced an investment promotion scheme with the purpose of favouring the inflow of foreign currency funds for local economic growth. Galaxy believes that Sal de Vida will meet the scheme eligibility criteria which include start-up of new businesses and direct foreign investment of at least US\$100 million. Key benefits are that up to 20% of export proceeds do not need to be repatriated into ARG pesos and can be allocated to debt repayment, dividends or patriation of direct investments. Galaxy will examine the scheme in detail and submit an application in due course.

## **PROJECT UPSIDE**

Wellfield drilling commenced in late 2020 to construct an additional eight production wells and explore the aquifer at depths not previously drilled. Depth extension drilling from two completed production wells increased the size of the brine aquifer and depth of the basement model. These two wells also achieved higher average lithium grades of 933 mg/L compared to the resource grade of 754mg/L lithium. This resulted in a 27% resource increase and 13% reserve increase announced on 14 April 2021.

Higher brine grade was not factored into the feasibility study or plant design basis as the data has only recently become available. For clarity, the plant has been designed on an input brine grade of 802 mg/L lithium. Higher brine grade will have a significant positive impact on the Project as the existing pond and process plant designs can easily accommodate increased feed grade within design tolerance parameters and therefore any increase in brine feed grade will result in increased plant production. Minimal additional capex would be required apart from minor increase to product storage and handling facilities. The impact on operational costs will be minimal with production costs largely variable as reagent consumption would increase in line with production rates.

Results from the remaining production well drilling, including lithium grade increase, will be incorporated into a revised resource and reserve statement in Q3 2021. At the same time, an update on the production capacity increase will be provided.

Further upside also remains in the following areas and activities will also be undertaken in 2021 to realise these benefits:

- Automation of aspects of the plant is expected to strengthen the quality control processes required to consistently achieve battery grade quality product.
- Power generation is currently designed to be sourced from diesel generators; however, a study assessing options to reduce
  carbon emissions and develop alternative sustainable supply strategies for all stages of development is underway. A photovoltaic
  solution is being investigated for Stage 2 and will be brought forward to Stage 1 if possible. Natural gas remains an option to
  replace diesel for baseload power generation and Galaxy is examining two options for supply of gas to the project.

#### ENVIRONMENTAL AND SOCIAL IMPACTS

#### Regulations and permitting

Sal de Vida has all major permits in place for the current phase of work including piloting, production wellfield drilling and early construction. Activities for securing required permits for full scale construction and operations of Stage 1 are well advanced and progressing on schedule.

An updated Environmental Impact Assessment ("EIA") permit was submitted on 1 March 2021 to reflect the lower impacts from the updated flowsheet and staged development plan. A number of baseline studies, including environmental and social, were undertaken during 2020 to support the EIA and engineering design work. A groundwater permit was also approved on 15 May 2020 providing sufficient supply of water for all stages of operations.

In 2020, an environmental and social management plan was developed for the construction and operation phases. This plan establishes the baseline and measures to prevent or minimise any negative impacts generated by the Project.

#### **Environment**

Galaxy is committed to the responsible use of water resources and minimising environmental impacts. Galaxy's internally developed process flowsheet was initially selected partly on the basis it consumed significantly less energy and water than other conventional technologies.



A recent environmental baseline study was performed covering areas such as water, flora, fauna, hydrogeology, hydrology, climate, landscape, ecosystem characterisation, and socio-economic considerations. This study was used to support the EIA and will be used to monitor any impacts from constructions and/or operations.

The Sal de Vida Project will consume minor amounts of raw water, equivalent to 1 - 2% of the groundwater recharge to the system. There is no expected loss of water to communities in either their groundwater or surface water usage. Water monitoring takes place at seven different control points alongside nearby rivers in addition to periodic sampling to test flow rates, chemical and physical properties.

A physical climate change impact risk study was completed in 2020. Overall, no material climate change risks were identified, and projections will continue to be used to inform project design.

#### Community engagement

Galaxy is committed to regularly engaging with community stakeholders and providing positive, lasting benefits through employment opportunities, local procurement and educational and health initiatives.

As part of a two-year corporate social responsibility program agreed in Q3 2019, Galaxy has committed to fund three projects to support the communities nearest to Sal de Vida. Construction of the high school in El Peñón village was completed in Q1 2021 and handed over to the Ministry of Education. Expansion of the primary school in Antofagasta de la Sierrahas progressed to 95% completion and construction of the first aid facility in Cienaga La Redonda commenced in Q1 2021.

A community office was opened in Antofagasta de la Sierra in January 2020. Separately a social baseline study including a perceptions test returned positive results about Galaxy and the Sal de Vida Project in Q4 2020.

Galaxy aims to support the community by maximising procurement of local goods and service and is committed to upskilling and providing future employment opportunities. As at 31 December 2020, over 80% of the local employees are from Catamarca and the project will create approximately 430 full-time positions in the peak of construction and 170 full time position during stable Stage 1 operations.

Further engagement with the provincial government and stakeholders, including the communities of Antofagasta de La Sierra, continue in relation to project updates.

## **EXECUTION STRATEGY**

#### Project schedule

The execution plan for 2021 focuses on transitioning from the early works phase into full scale execution of the project. Early works will include construction and filling of the first ponds by year end, procurement of long lead items to support pond commissioning, detailed design work for the plant and potentially early orders of specific processing equipment. Project execution later in the year will focus on commissioning the first string of operational ponds before commencing the plant construction and progressing towards operational readiness. This schedule allows for brine evaporation to occur during plant construction, allowing evaporated brine to feed the plant once commissioned. Galaxy is targeting first lithium carbonate production in late 2022 as shown in Figure 6.

Galaxy currently has a small and experienced owners team located in Catamarca and Perth. It is intended to have varying levels of involvement and control in the design of the project, procurement of key equipment and quality control during construction. The feasibility has been completed on the basis of an engineering procurement construction and management style lead contractor being central to a successful delivery. However, due to the ongoing process development work undertaken by Galaxy, some adaption of the final contracting model may be better suited to manage project and operational performance risks.



Figure 6: Indicative Stage 1 development plan



The indicative, high-level project schedules displayed in Figure 6 assumes an easing of COVID-19 restrictions. These restrictions still remain a threat to the project schedule, particularly to mobilising large contractor workforces during the construction phase and the delivery of equipment and consumables to site. Galaxy continues to adapt its execution strategy where possible while prioritising the health and safety of staff and the surrounding communities. Galaxy monitors the progress of all work packages closely and continues to develop contingency plans to mitigate all major risk elements where feasible.

## Offtake & downstream strategy

Piloting samples have been dispatched to prospective offtake customers for testing and discussions with Galaxy are underway. The production of high-grade lithium carbonate provides Galaxy with direct access to top tier value chains, enabling higher margins and avoiding competition in the lower grade sectors.

## PREFEASIBILITY STUDY ON EXPANSION

In Q1 2021 Galaxy completed PFS level engineering on Stages 2 and 3 expansions. The PFS has used the Canadian Institute of Mining, Metallurgy and Petroleum as the minimum engineering standard to be achieved and this is a prerequisite for the conversion of Mineral Resources to Mineral Reserves. The basis of design for Stage 2 & 3 is a duplication of Stage 1 with each additional phase assessed to produce 10,700 tpa of lithium carbonate battery grade product. The additional wellfields (made of eight production wells each) have been located in the southwest region of the tenement. The additional processing capacity will be achieved by adding to the existing plant in a staged approach. Synergies are expected with labour, reagents and product handling. The PFS confirms capital and operating assumptions for the processing plant expansion and additional evaporation ponds according to ACCE Class 5. Project delivery synergies from continuity of engineering, and allocated contingency have not yet been determined and are expected to be realised as further work is completed.

#### Development capital and operating costs

Project development capital expenditure for all three stages combined is estimated to be US\$466 million and incudes the same key design assumptions as Stage 1 detailed in Table 4. OPEX for all stages is estimated to be US\$3,352 per tonne LC, a slight reduction to Stage 1 OPEX largely due to labour synergies.

While the fundamental approach is to replicate Stage 1 with increased wells, pumps, evaporation ponds and plant capacity, it is expected that many synergies will be realised including project delivery and development capital and operating costs. Continuity of people, systems and processes, engineering efficiencies and targeted allocation of contingency are expected. However, the PFS level does not accommodate these expected synergies other than minor indirect cost reductions. Further upside is expected as more detailed engineering on these stages advance.

## **Project Economics**

The Feasibility for all stages demonstrates strong financial outcomes with a Pre-tax NPV<sub>8% real</sub> of US\$2.1 billion.

Table 7: Stages 1-3 - Summary of financials over a 44 year project life

Financial Summary	Units	Stage 1	Stages 1-3
NPV (Pre-tax)	US\$M	809	2,061
NPV (Post-tax)	US\$M	619	1,565
IRR (Pre-tax)	%	43	43
IRR (Post-tax)	%	40	40
Payback Period <sup>1</sup>	Years	2	3.6
Development Capital Intensity	US\$ / tpa LC	14,318	14,485
Pre-tax NPV: CAPEX	X: 1	5.3	4.4

<sup>1</sup> payback period is from date of first commercial production



#### **Project execution**

For the purpose of determining the operating parameters, Stage 1 ramp up and production quality assumptions have been used. It is proposed that once the commissioning of Stage 1 commences, the development of Stage 2 will occur in parallel. As Stage 2 comes online with increased production, the development of Stage 3 will commence. Through the final delivery phases of Stage 1, Galaxy will continue to assess the staged developed assumptions and optimise the business case.

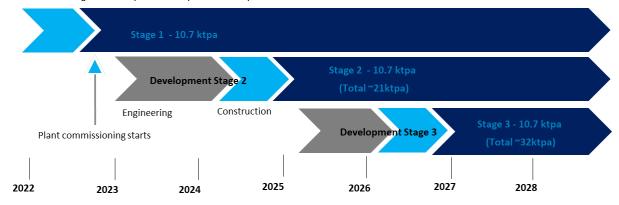


Figure 7: Indicative, high-level project schedule for all stages

#### **ENDS**

This release was authorised by Mr. Simon Hay, Chief Executive Officer of Galaxy Resources Limited.

#### For more information

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## About Galaxy (ASX: GXY)

Galaxy Resources Limited is an international company with lithium production facilities, hard rock mines and brine assets in Australia, Canada and Argentina. It wholly owns and operates the Mt Cattlin mine in Ravensthorpe Western Australia, which is currently producing spodumene and tantalum concentrate.

Galaxy is advancing development of the wholly owned Sal de Vida lithium brine project in Argentina situated in the lithium triangle (where Chile, Argentina and Bolivia meet), which is currently the source of more than 40% of global lithium production. Sal de Vida has excellent potential as a low-cost brine-based lithium chemical production facility.

Galaxy's diversified project portfolio includes the wholly owned James Bay lithium pegmatite project in Quebec, Canada. James Bay which can provide additional spodumene concentrate production to capitalise on future lithium demand growth.

Lithium compounds are used in the manufacture of ceramics, glass, pharmaceuticals and are an essential cathode material for long life lithium-ion batteries used in hybrid and electric vehicles, as well as mass energy storage systems and consumer electronics. Galaxy is bullish about the global lithium demand outlook and is aiming to become a major producer of lithium products.

## **Caution Regarding Forward Looking Information**

This document contains forward looking statements concerning Galaxy. Statements concerning mining reserves and resources may also be deemed to be forward looking statements in that they involve estimates based on specific assumptions.

Forward-looking statements are not statements of historical fact and actual events and results may differ materially from those described in the forward-looking statements as a result of a variety of risks, uncertainties and other factors. Forward-looking statements are inherently subject to business, economic, competitive, political and social uncertainties and contingencies. Many factors could cause the Company's actual results to differ materially from those expressed or implied in any forward-looking information provided by the Company, or on behalf of the Company. Such factors include, among other things, risks relating to additional funding requirements, metal prices, exploration, development and operating risks, competition, production risks, regulatory restrictions, including environmental regulation and liability and potential title disputes.

Forward looking statements in this document are based on Galaxy's beliefs, opinions and estimates of Galaxy as of the dates the forward-looking statements are made and no obligation is assumed to update forward looking statements if these beliefs, opinions and estimates should change or to reflect other future developments. There can be no assurance that Galaxy's plans for development of its mineral properties will proceed as currently expected. There can also be no assurance that Galaxy will be able to confirm the presence of additional mineral deposits, that any mineralization will prove to be economic or that a mine will successfully be developed on any of Galaxy's mineral properties. Circumstances or management's estimates or opinions could change. The reader is cautioned not to place undue reliance on forward-looking statements. Data and amounts shown in this document relating to capital costs, operating costs, potential or estimated cashflow and project timelines are internally generated best estimates only. All such information and data is currently under review as part of Galaxy's ongoing operational, development and feasibility studies. Accordingly, Galaxy makes no representation as to the accuracy and/or completeness of the figures or data included in the document.

#### **Competent Persons Statement**

Any information in this announcement that relates to Sal de Vida Project Exploration Results, Mineral Resources & Reserve is extracted from the report entitled Sal de Vida Resource & Reserve Update released on 14 April 2021 which is available to view on www.gxy.com and www.asx.com.au. The Company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcements and that all material assumptions and technical parameters underpinning the Mineral Resources and Ore Reserves estimates in the relevant market announcement 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 announcement.

The scientific and technical information contained in this announcement has been reviewed and approved by, Michael Rosko, MSc. Geology (Montgomery and Associates), as it relates to geology, modelling and resource reserve estimates; John Riordan, BSc. Chemical Engineering (DRA Global), as it relates to processing, facilities, infrastructure, project economics, capital and operating cost estimates; Anthony Sanford, BSc. (Hons) and MBA in Mineral Resources Management (Ausenco), as it relates to permitting and environmental and social studies. The scientific and technical information contained in this release will be supported by a technical report to be prepared in accordance with National Instrument 43-101 – Standards for Disclosure for Mineral Projects. The Technical Report will be filed within 45 days of this release and will be available for review under the Company's profile on SEDAR at <a href="https://www.sedar.com">www.sedar.com</a>.



#### ASX ANNOUNCEMENT / MEDIA RELEASE

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All references to unit operating cash costs assume FOB Angamos, Chile.

