savannah resources plc

SAVANNAH RESOURCES PLC

AIM: SAV

AN ENERGY METALS GROUP

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Savannah Resources Plc

Scoping Study for the Mina do Barroso Lithium Project Delivers NPV of US$356m Solid Basis to Fast Track the Project to a Feasibility Study

Savannah Resources plc (AIM: SAV and SWB: SAV) ('Savannah' or 'the Company'), the AIM quoted resource development company, is pleased to announce the results of its Scoping Study (the 'Study') undertaken on the Company's 75% owned Mina do Barroso Lithium Project ('Mina do Barroso' or the 'Project'), located in northern Portugal **(Figure 1).**

KEY FINDINGS OF SCOPING STUDY (ON 100% PROJECT BASIS)

- Confirms that Mina do Barroso has the potential to be a major European producer of spodumene lithium
- Demonstrates robust project economics with the potential to deliver substantial shareholder value
- Project considered to be of low technical risk with open pit mining and conventional processing combining Dense Media Separation ('DMS') and flotation circuit to produce a spodumene concentrate for export sale
- Excellent base case pre-tax NPV_8 of US$356m and IRR of 63%
- Strong outcomes based on a Mining inventory of 14.42Mt at 1.07% Li_2O and average annual run-of-mine production of 1.3Mtpa, over 11 years
- Average annual production of ~175,000tpa of spodumene concentrate at 6% Li_2O
- Life of Mine ('LOM') EBITDA of US$805m with payback period of 1.7 years
- Average EBITDA of US$72m per annum
- LOM revenue of US$1,555m
- Strip ratio of 1.6:1 (waste to ore) for first four years, 5.2:1 for LOM
- Average LOM C1 Cash Operating Cost of US$271 per tonne of concentrate (CIF China)
- Initial CAPEX of US$109m (including feldspar and quartz circuit, and excluding contingencies)
- Solid basis to fast track the Project towards a Feasibility Study
- Fast tracked development could see the Project producing concentrate in Q1 2020

Opportunities for Growth and Optimisation

- Current scenario is considered as a base case, with significant opportunity to expand and improve the Project through further Mineral Resource increases and further project definition and optimisations
- Expansion of the current Mineral Resource base is likely to provide a significant opportunity to expand mine life and potentially increase annual processing rates
- Expanding the site footprint will potentially improve infrastructure options and reduce mining and infrastructure costs
- Replacing higher strip ratio ore in the later years of the current mining schedule to reduce average mining costs and footprint of any potential development
- Review and optimisation of the Project's CAPEX requirement
- Metallurgical optimisation to potentially increase spodumene recovery rates from 80%

Savannah's CEO, David Archer said: "The Scoping Study highlights the robust features and outstanding investment appeal of the Mina do Barroso Lithium Project with a very high-IRR and strong cash generation, even with a conservative spodumene prices. This is matched by an attractive initial CAPEX estimate of US$109m, which includes the circuit for feldspar and quartz. The Project's cash costs put it at the lower end of the spodumene lithium cost curve. We believe these results show that we are on track to become a low-cost producer of quality spodumene lithium concentrate by early-2020.

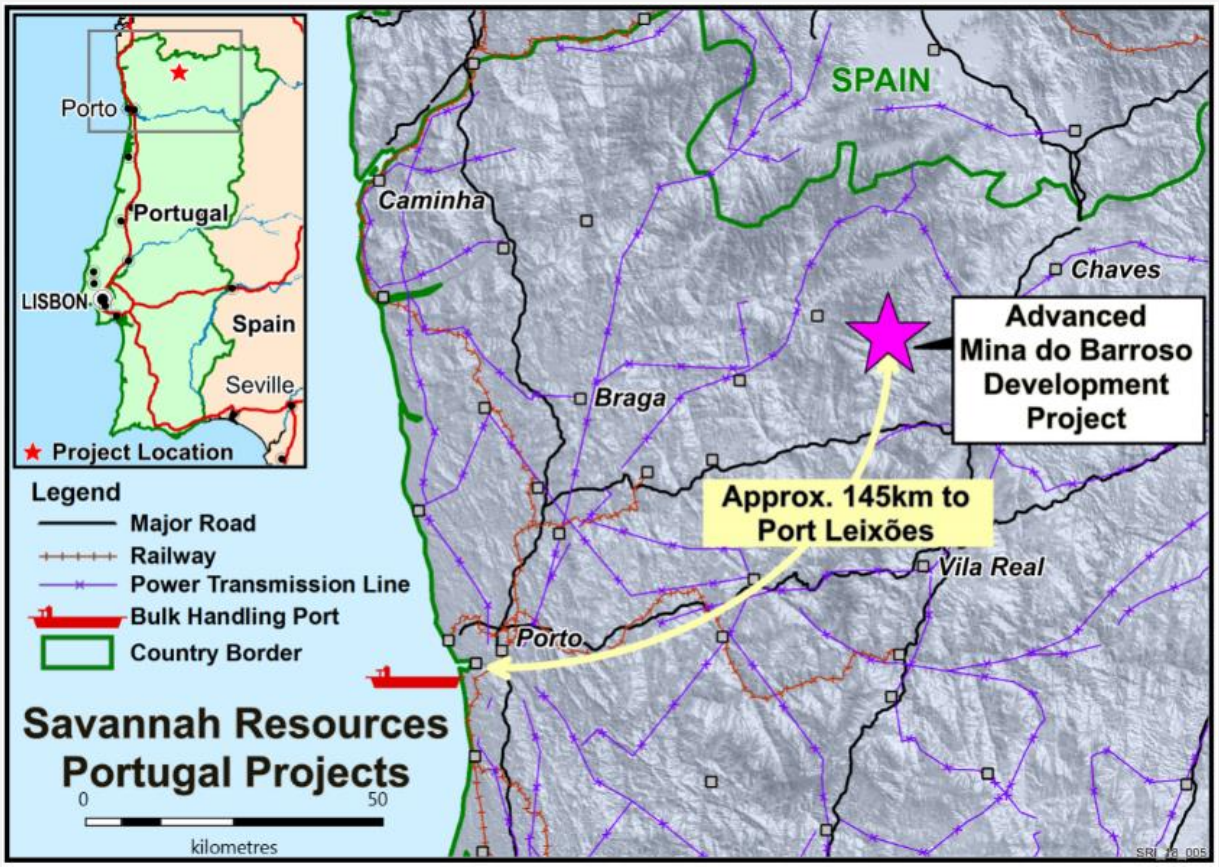
"There is exponential growth across the lithium supply chain as the industry gears up for transformational change to meet demand from the automotive and energy storage sectors, with Bloomberg New Energy Finance recently reporting that the transport sector is fast becoming the main driver of demand for lithium-ion batteries, overtaking consumer electronics for the first time this year. This is a great time to be bringing a new lithium mine into development.

"Since acquiring the Project just over a year ago we have achieved an enormous amount, having delivered not only a maiden Mineral Resource Estimate but two major Mineral Resource Estimate upgrades with the current estimate at 14Mt at 1.1% Li_2O, and now, a Scoping Study. We are committed to maintaining this pace as we continue to fast-track towards production, and believe significant further upside exists, with excellent potential to increase the Mineral Resource Estimate and the mining rate, schedule lower strip ratio ores in the latter years of the Project and optimise site operational features to further lower the cost of production and increase the value of the Project.

"Mina do Barroso is developing fast and it is clear that it will be a key feature in the up-stream part of the European lithium value chain and will help to drive European lithium independence."

A video of the Company's Mina do Barroso Lithium Project is now available on the Company's website at www.savannahresources.com.

Figure 1. Mina do Barroso Project Summary Map (source: Company information)



Executive Summary

The Mina do Barroso Lithium Project is located in northern Portugal near the town of Boticas and around 145km by road from the deep-water port of *Leixões* near the city of Porto. The object of the Scoping Study was to produce a preliminary base case development centred on the defined Mineral Resource Estimate of 14Mt at 1.1% Li_2O, using conventional processes to produce a marketable Li_2O concentrate to demonstrate the potential economics of the Project. Material assumptions and key metrics for the Study are presented in **Table 1.**

Table 1. Material assumptions and key metrics (100% Project Basis)

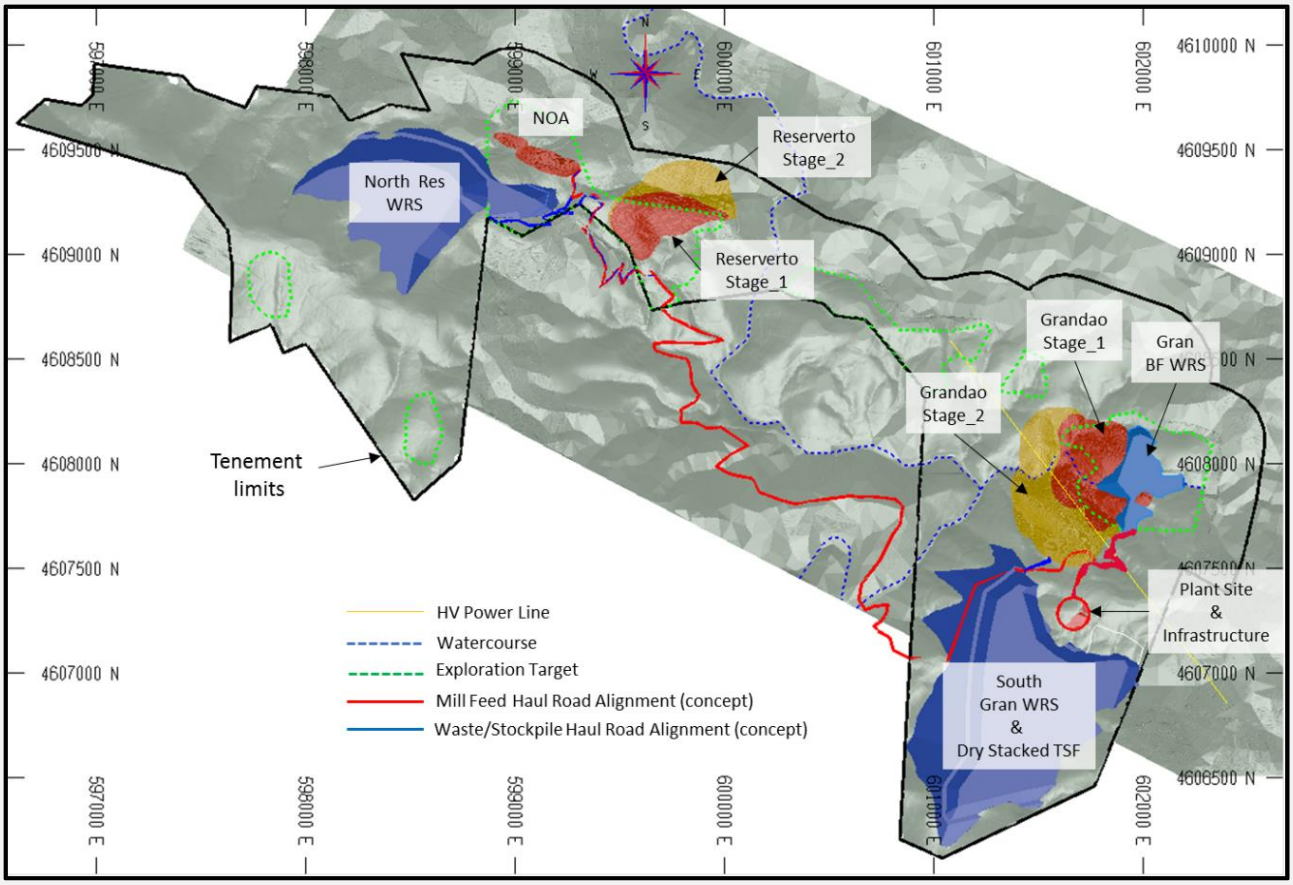
Outcome:			
Parameter	**Unit**	**Base Case**	**Upside Case**
Initial CAPEX (excluding contingencies)	US$ M	109	109
Average LOM C1 Cash Operating Cost**	US$/t conc	271	274
Average Years 1-4, C1 Cash Operating Cost**	US$/t conc	210	212
LOM Revenue	US$ M	1,555	1,783
LOM Operation Expenditure	US$ M	553	553
LOM EBITDA	US$ M	805	1,019
Annual EBITDA	US$ M	72	91
Pre-Tax NPV_8	US$ M	356	474
Pre-Tax IRR	%	63.2	68.2
Pre-Tax Payback Period	Years	1.7	1.7
Post-Tax NPV_8	US$ M	241	321
Post-Tax IRR	%	48.6	53.2
Post-Tax Payback Period	Years	2.1	2.1
Input:			
Parameter	**Unit**	**Base Case**	**Upside Case**
Proposed Start of Construction	Date	Q2 2019	
Duration of Construction	Months	9 – 10	
Start of Production	Date	Q1 2020	
Potential Mine Life	Years	~11yrs	
Target LOM Ore Mined:	Mt	14.42	
Indicated Resources	%	50	
Inferred Resources	%	38	
Exploration Target *	%	12	
Annual Ore Throughput	Mtpa	1.3	
Average LOM Strip ratio (waste to plant feed)	w:o	5.2:1	
Average Years 1-4 Strip ratio (waste to plant feed)	w:o	1.6:1	
Average Feed Grade	% Li_2O	1.07 (1.02 diluted)	
Plant Li_2O Recovery	%	80	
Potential Annual 6% Spodumene Production	tpa	~175,000	
Feldspar Production	tpa	~276,000	
Quartz Production	tpa	~173,000	
Low Grade Bulk Pegmatite (LOM)	Mt	2.7	
Government Royalty rate (lithium concentrate)	%	3	
Average LOM Feldspar Price	US$/t	39	
Average LOM Quartz Price	US$/t	33	
Average LOM 6% Spodumene Concentrate Price	US$/t	685	800

*Cautionary Statement: The potential quantity and grade of the Exploration Targets is conceptual in nature, there has been insufficient exploration work to estimate a mineral resource and it is uncertain if further exploration will result in defining a mineral resource. As such, potential investors should not rely upon this Exploration Target as indicative of a mineral resource and should not base their investment decision, in whole or in part, on such Exploration Target.

** C1 Cash Operating Costs include all mining, processing, transport, shipping/freight, corporate, administration, marketing and royalty costs, and are net of by-product credits.

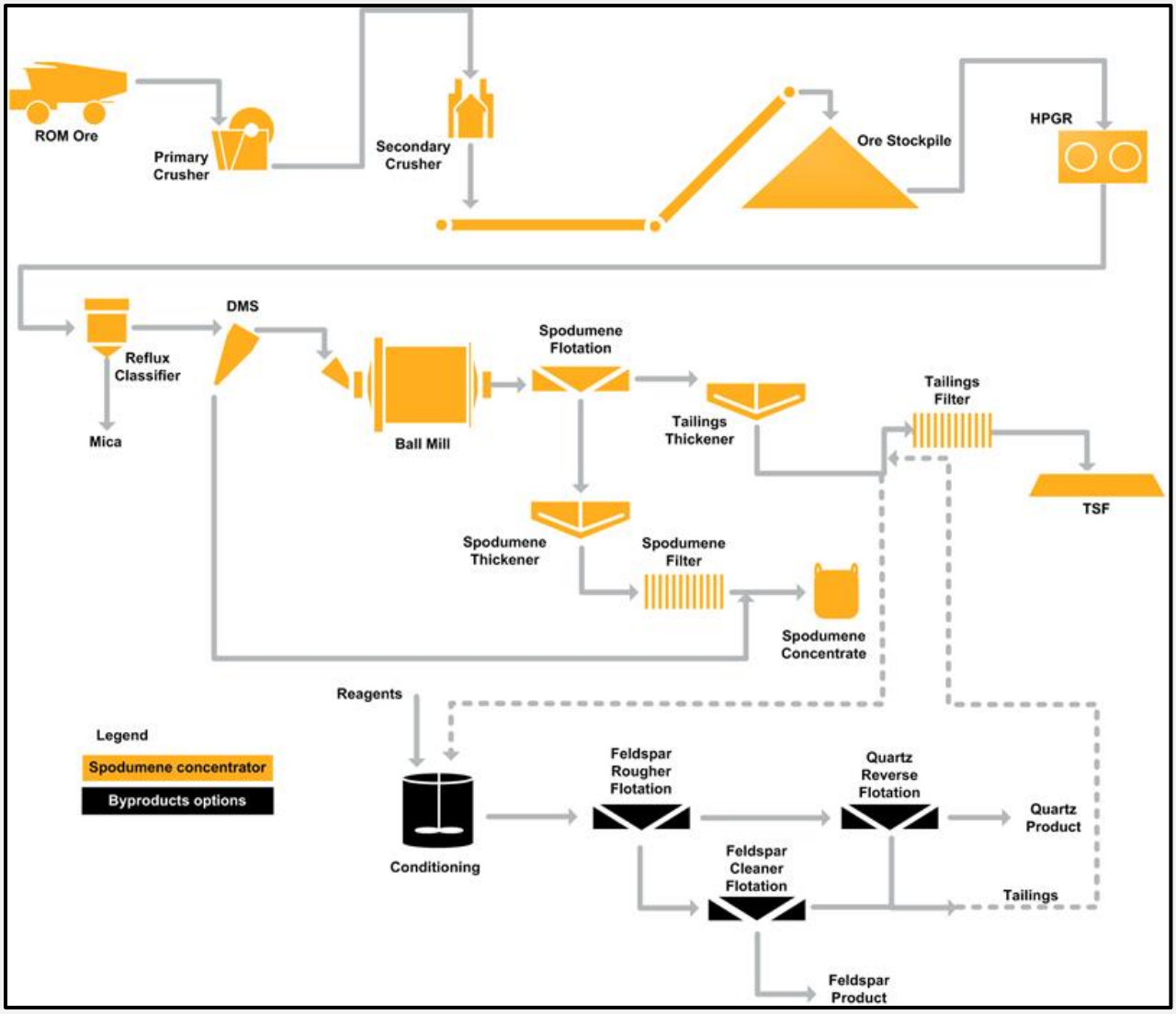
The Mina do Barroso Scoping Study is based on a mine and concentrator only development (**Figure 2**) for the production of spodumene concentrate for sale to the export market, as well as investigating the sale of low-grade pegmatite material and the production of quartz and feldspar co-products, which offer additional revenue potential. The Project will use contractor mining and fleet. In addition, the Project has been designed to address its sustainability and environmental features which have been optimised by recovering co-products from the feed and by dry stacking tailings, eliminating the need for a tailings dam and reducing the overall footprint of the operation.

Figure 2. Mina Do Barroso Lithium Project Conceptual Mining Site Layout (source: Company information)



The Scoping Study developed flowsheet options for a combined DMS and flotation circuit for the recovery of spodumene with tails thickening and dry stack (**Figure 3**). Low-grade pegmatite material that did not form part of the concentrator feed was quantified so that the opportunity of selling this material can be evaluated. The opportunity of producing both quartz and feldspar co-products from the tailings for the local ceramics industry was also investigated.

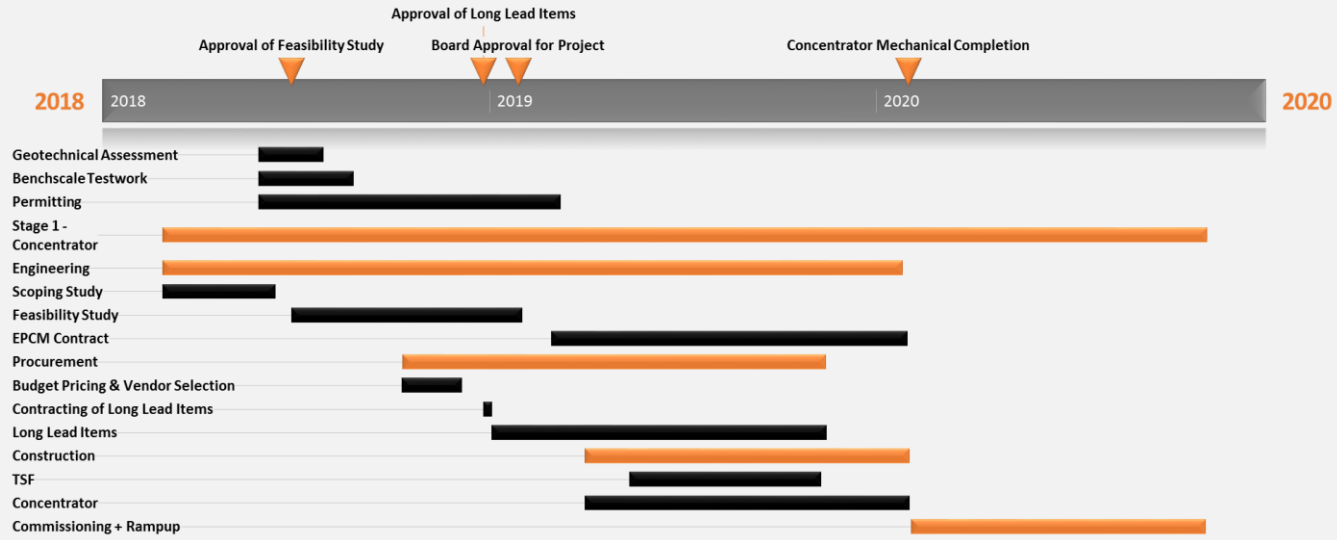
Figure 3. Simplified Concentrator Flowsheet (source: Company information)



The Project's NPV was calculated on a 100% project basis, discounted at 8%, and has been estimated via cash flow modelling. The deterministic sensitivity analysis of the Base Case NPV estimates have been calculated on a range of -20% to +35%. These estimates accommodate fundamental uncertainties at the scoping level of study and will be refined through feasibility level studies. The sensitivity analysis was undertaken on all of the key inputs to arrive at a range of project NPV's for any given sensitivity (concentrate price, initial CAPEX, operation expenditure, and processing concentrate recovery rates). The sensitivity analysis is included in the Sensitivities section in Appendix 1. The NPV is most sensitive to concentrate price and recovery rates. The NPV is less sensitive to initial CAPEX and operation expenditure.

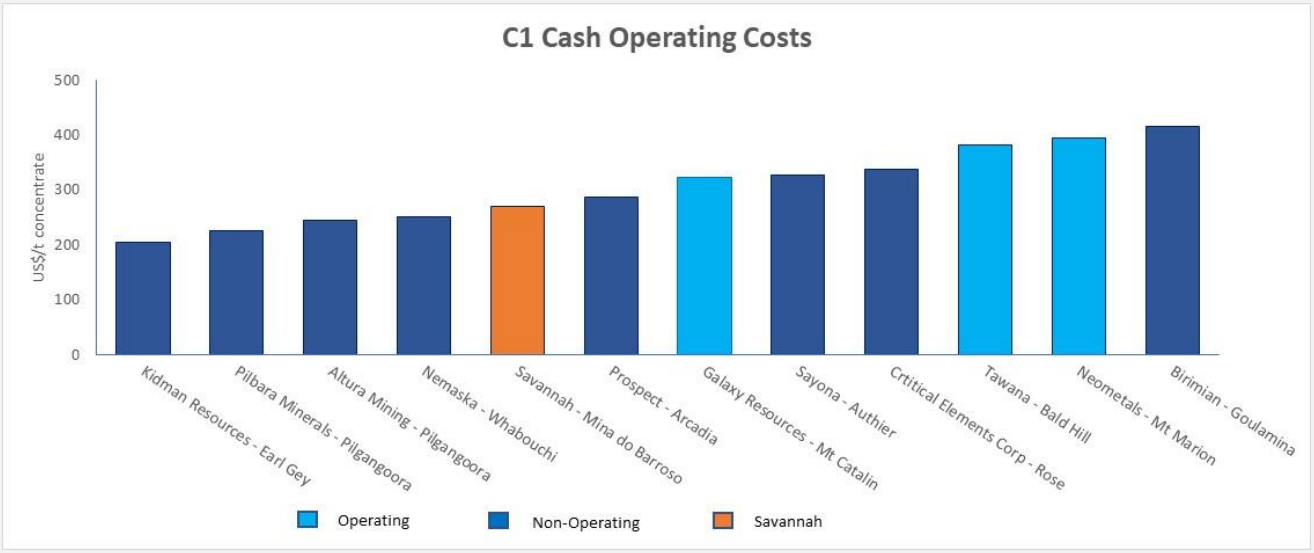
An analysis of the requirements to fast track the Project into production was also conducted and concluded that the Project could be potentially brought into production in Q1 2020. A summary of the proposed time line is provided in **Figure 4.**

Figure 4. High level Project Execution Plan



An analysis of publicly available information indicates that the proposed Mina do Barroso operation will be at the lower end of the spodumene lithium cash costs curve based on published C1 cash operating costs **(Figure 5)** indicating that the Project is very competitive on a global basis when compared to other similar projects*.

Figure 5. C1 Cash operating costs of lithium pegmatite projects (source: publicly available information)



*Reasonable care has been exercised in this comparison, but it is noted that there may be minor differences on the inclusion of certain costs by peers, in particular Savannah has included royalty costs but some peers may not have done.

The current scenario is considered as base case model, with significant opportunity to expand and improve the Project through further resource expansions, project definition and optimisations:

- Expansion of the resource base **(Table 2)** is likely to provide significant opportunity to expand mine life and potentially increase annual mining and processing rates. The current combined Mineral Resource Estimate and Exploration Target of 22-26Mt at 1.0% to 1.2%Li_2O suggests that there is significant potential to further expand the resource base and improve the overall financial case for the Project

Table 2. Combined Resource Estimate and Exploration Target for the Mina do Barroso Project

Mineral Resource Estimate and Exploration Target for Mina do Barroso			
Deposit	Tonnes (Mt)	Li_2O%	Li_2O Tonnes
Grandao	10.3	1.1	111,600
Reservatorio	3.2	1.0	32,000
Noa	0.5	1.2	5,600
Total Inferred Mineral Resources	**14.0**	**1.1**	**149,200**
Exploration Target *	8-12	1.0-1.2	
Total Current Project Target	**22-26**	**1.0-1.2**	

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- The Mina do Barroso Project site is quite hilly, which presents some logistical challenges for the Project. Securing further land and expansion of the current Mining Lease to enable the re-design of the proposed site footprint would provide a significant opportunity to improve infrastructure options and hence reducing mining and infrastructure costs for the Project.
- The last four years of the current mining schedule utilises high-strip ratio ore and a key focus will be to replace this in the schedule with more near surface, low-strip ratio ore which is likely to significantly reduce the overall mining costs incurred in these years and the overall footprint of any potential development.

Competent Persons

The information in this announcement that relates to exploration results is based upon information compiled by Mr Dale Ferguson, Technical Director of Savannah Resources Limited. Mr Ferguson is a Member of the Australasian Institute of Mining and Metallurgy (AusIMM) and has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the December 2012 edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves" (JORC Code). Mr Ferguson consents to the inclusion in the report of the matters based upon the information in the form and context in which it appears.

The Information in this report that relates to Mineral Resources is based on information compiled by Mr Paul Payne, a Competent Person who is a Fellow of the Australasian Institute of Mining and Metallurgy. Mr Payne is a full-time employee of Payne Geological Services. Mr Payne has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves". Mr Payne consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

The scoping level mining assessment of the Mino Do Barroso Deposit has been completed by Mr Nigel Spicer who is a Member of the Australasian Institute of Mining and Metallurgy and Chartered Engineer (IOM3). Mr. Spicer has sufficient experience relevant to the styles of mineralisation and

type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves". Mr Spicer is the principal of Minesure Pty Ltd and is a consultant to Savannah Resources Plc and consents to the inclusion in the presentation of the matters based on his information in the form and context in which it appears.

It should be noted that as the Mining assessment has been conducted at a scoping level no Ore Reserves are being reported for the Mina do Barroso Deposit.

Forward Looking Statement

The information contained within this announcement may contain references to forecasts, estimates, assumptions and other forward looking statements. The Company believes that its expectations, estimates and forecast outcomes are based on reasonable assumptions, it can give no assurance that they will be achieved. These assumptions may be affected by a variety of variables and changes in the base assumptions that are subject to risk factors associated with the nature of the business, which could cause actual results to vary materially from those expressed herein. Potential investors should make and rely upon their own investigations before deciding on whether to acquire or deal in the Company's securities.

Regulatory Information

This announcement contains inside information for the purposes of Article 7 of Regulation (EU) 596/2014.

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About Savannah

Savannah is a diversified resources group (AIM: SAV) with a portfolio of energy metals projects - lithium in Portugal and copper in Oman - together with the world-class Mutamba Heavy Mineral Sands Project in Mozambique, which is being developed in a consortium with the global major Rio Tinto. Savannah is committed to serving the interests of our shareholders and to delivering outcomes that will improve the lives of our staff and the communities the Company works with.

The group is listed and regulated on AIM and the Company's ordinary shares are also available on the Börse Stuttgart (SWB) under the ticker "SAV".

Appendix 1 – Scoping Study Details

Key Consultants

Hatch

Hatch was engaged to provide engineering services in relation to Savannah's Scoping Study for the Mina do Barroso Lithium Project. The Scoping Study is based upon inputs and directions by the Company, and the flow sheet Savannah selected. Hatch's services were provided in combination and integrated with Savannah's own inputs, and other 3rd Parties engaged by Savannah Resources.

PayneGeo Pty Ltd.

PayneGeo developed the geological model and completed the resource estimations utilised in the Scoping Study.

Minesure Pty Ltd.

Minesure completed the analysis and definition of the scoping level mining inventory and built up the contractor costs model which is the basis of the mining concept for the Scoping Study.

Geology

The Barroso – Alvão Region is characterized by the presence of a large field of several dozen pegmatite and aplite-pegmatite dykes of granitic composition. Pegmatite dykes are mainly intruded in the granitic rocks of the region whilst aplite-pegmatite dykes are hosted by low- to medium-grade metasedimentary rocks of Silurian age that are strongly deformed (B. CHAROY et al.,1992). The thickness of these dykes ranges from less than 1m up to 50m.

The Li-rich aplite-pegmatite dykes show a spatial distribution of 3 sub-types (LIMA et al, 2003):

- Spodumene-rich aplite-pegmatite dykes and sills are dominant at N and NE regions;
- Petalite-rich are dominant at SW; and
- Lepidolite-rich occur at NW regions.

The Mina do Barroso Project is centred on a series of spodumene rich aplite-pegmatite dykes and sills which have formed the basis of this study.

Mineral Resource and Exploration Target

Savannah has been drilling at Mina do Barroso since mid-2017 having completed to date an extensive exploration programme with over 140 RC drill holes for more than 13,500m completed to date. The three main deposits comprise:

Grandao Deposit: Mineralised zone over 500m long, 450m wide and pegmatite depths of up to 50m. Results from recent drilling has recorded the broadest and most significant results for the Project to date.

Reservatorio Deposit: Drilling has confirmed that the lithium mineralisation extends to over 400m strike length, with good down dip extensions of at least 100m.

NOA Deposit: Drilling has confirmed the presence of lithium mineralisation over a 200m strike length together with good down dip extensions of at least 50m.

The current Indicated and Inferred Mineral Resource Estimate for the Project calculated by PayneGeo in April 2018 is 14Mt at 1.1% Li_2O containing 149,200t of Li_2O using a 0.5% Li_2O cut-off grade and summarised in Table 2. To quantify the potential of the Project beyond the currently defined Indicated and Inferred Mineral Resource Estimate, an initial Exploration Target* for the Grandao and Reservatorio Deposits of 8-12Mt at 1.0% to 1.2% Li_2O has been defined as shown in the table. This gives a Project target (including Mineral Resource Estimate) of 22-26Mt at 1.0-1.2% Li_2O.

*Cautionary Statement: The potential quantity and grade of the Exploration Targets is conceptual in nature, there has been insufficient exploration work to estimate a mineral resource and it is uncertain if further exploration will result in defining a mineral resource. As such, potential investors should not rely upon this Exploration Target as indicative of a mineral resource and should not base their investment decision, in whole or in part, on such Exploration Target.

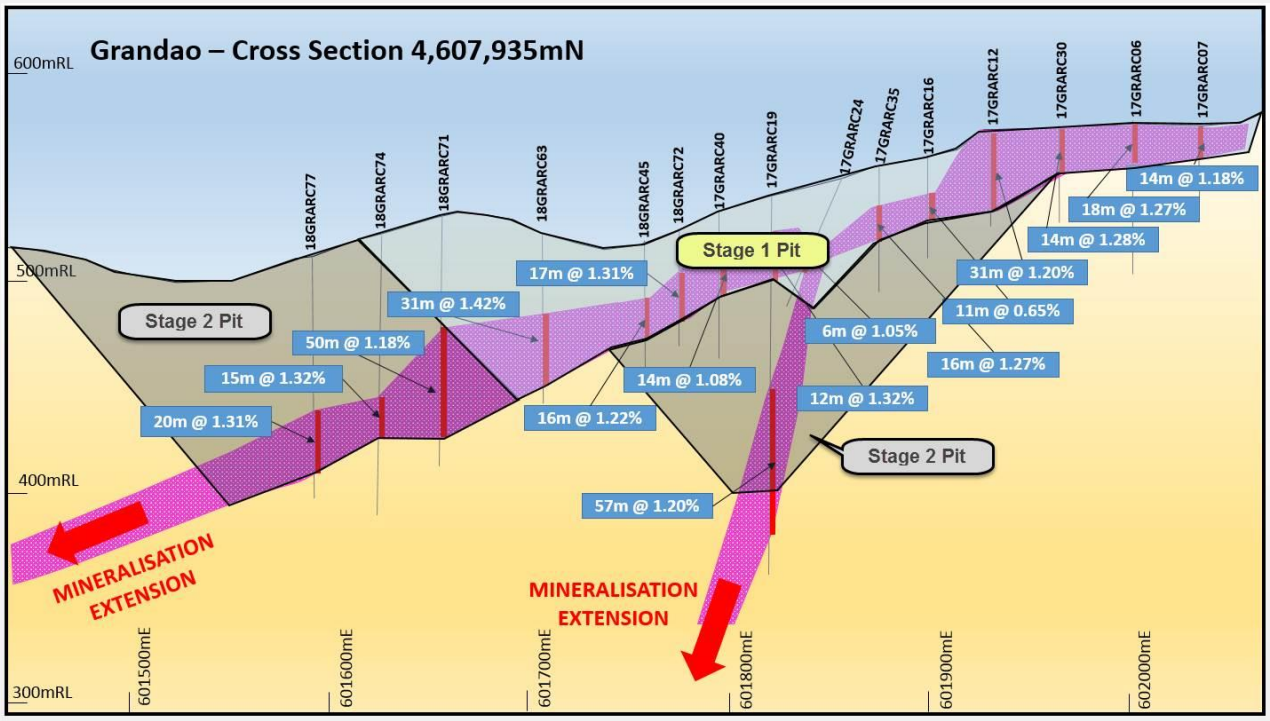
Mining Inventory

Conceptual open pit mine planning for the Mina Do Barroso Lithium Project was developed targeting an annual plant feed rate of 1.3Mtpa with an estimated average over the life of mine mill head grade of 1.02 %Li_2O (diluted), with an average overall strip ratio of 5.2:1 (waste:ore ratio) and a resultant eleven plus year life of mine (LOM). It is important to note that as this is a scoping study, the resulting mining inventory cannot be defined as an Ore Reserve under JORC (2012) guidelines.

In general, the mineralisation grades are relatively consistent across the deposits so to improve project economics basic pit stages were identified with the intention of deferring stripping requirements over the LOM. The concept plan incorporates five pit stages from the three deposits modelled to date (see conceptual site layout in **Figure 2**):

- Grandao (2 stages, **Figure 6)**
- Reservatorio (2 stages)
- NOA (single stage).

Figure 6. Cross Section through the conceptual Grandao 2 stage Pit



Total conceptual optimised pit shell inventories are listed in **Table 3**. Three geological block models (one for each respective deposit) were provided and conceptual pit shells were generated using an optimisation software founded on the Lerchs Grossman algorithm.

Table 3. Conceptual Optimised Shell and Stage Inventories

Deposit	**Stage**	**Feed** *(Mt)*	**Diluted Li_2O** *(%)*	**Diluted Fe_2O_3** *(%)*	**Stripping** *(Mt)*	**Strip Ratio** *(w:o)*
Grandao	1	5.81	1.01	1.17	9.15	1.6
Reservatorio	1	2.49	0.97	1.32	8.95	3.6
Reservatorio	2	1.72	1.01	1.38	11.91	6.9
NOA	1	0.27	1.02	1.29	1.60	5.9
Grandao	2	4.13	1.05	1.39	43.82	10.6
Total		**14.42**	**1.02**	**1.29**	**75.43**	**5.2**

The optimised shells used in this evaluation are based on the Indicated and Inferred Mineral Resource Estimate and include the Exploration Target not included in the Mineral Resource Estimate. All material has had appropriate mining dilution and mining recovery factors applied. The quantities for each type of material are reported in **Table 4**.

Table 4. Plant Feed Inventories by Pit and Material Type

	Indicated Resource		Inferred Resource		Exploration Target*				
Prospect	**Tonnes (M)**	**Li_2O %**	**Tonnes (M)**	**Li_2O%**	**Tonnes (M)**	**Li_2O%**	**Total (Mt)**	**Li_2O%**	**Percentage**
Grandao	7.16	1.06	2.60	1.13	0.18	1.10	9.94	1.08	69%
Reservatorio	-	-	2.61	1.01	1.60	1.09	4.21	1.04	29%
NOA	-	-	0.27	1.21	-	-	0.27	1.21	2%
Total (Mt)	**7.16**	**1.06**	**5.48**	**1.07**	**1.78**	**1.09**	**14.42**	**1.07**	**100%**
Percentage	**50%**		**38%**		**12%**		**100%**		

Minor rounding errors may occur in the table

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The Mina do Barroso total site conceptual infrastructure stretches 5 km by 2.5 km over relatively steep and undulating terrain as shown in **Figure 2**. All conceptual mine infrastructure and excavations developed in this study were restricted to:

- within tenement boundaries;
- minimised sterilisation of prospective target exploration zones;
- respected offset boundaries for major watercourses; and
- legacy travel routes (where available).

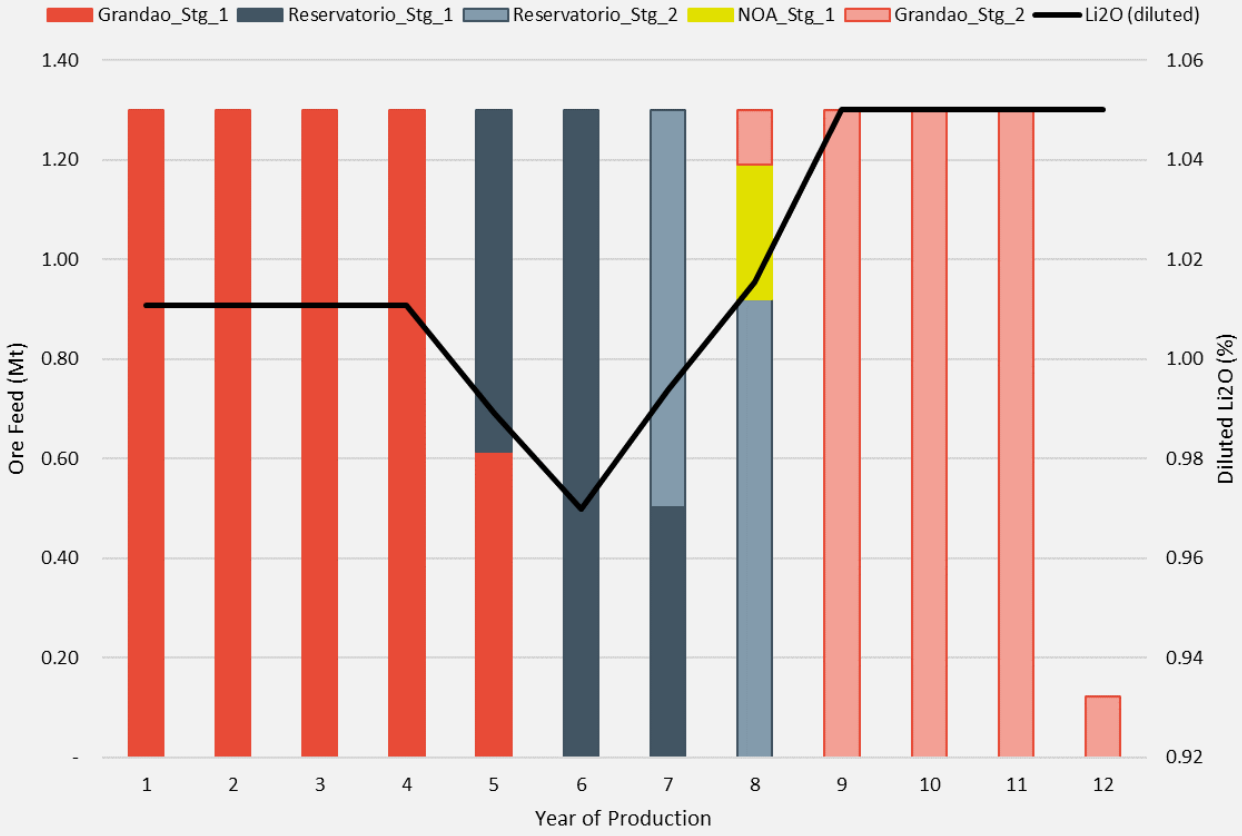
The conceptual mine production plan is summarised in **Table 5** and **Figure 7**. As the Project progresses further refinements to haul routing plans, waste rock storage management and pit staging should be targeted to take advantage of opportunities for reduced haulage capital and operating costs.

Quantities of bulk pegmatite are also included in the production plan as valuable material below the cut-off grade to be stockpiled and sold. A total of 2.7 Mt of this material has been identified.

Table 5. Conceptual Mina do Barroso mine production plan (pre-strip incl. in Year 1)

Conceptual Mine Production	**Total**	**Year of Production**											
		1	2	3	4	5	6	7	8	9	10	11	12
Days	3,994	360	360	360	360	360	360	360	360	360	360	360	34
Plant Feed *(Mt)*	14.4	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	0.1
Li_2O (diluted) *(%)*	1.02	1.01	1.01	1.01	1.01	0.99	0.97	0.99	1.02	1.05	1.05	1.05	1.05
Stripping (waste + peg) *(Mt)*	75.4	2.0	2.0	2.0	2.0	3.4	4.7	7.3	9.1	13.8	13.8	13.8	1.3
Strip Ratio *(t:t)*	5.2	1.6	1.6	1.6	1.6	2.6	3.6	5.6	7.0	10.6	10.6	10.6	10.6
Bulk pegmatite *(Mt)*	2.7	0.2	0.2	0.2	0.2	0.4	0.5	0.3	0.2	0.2	0.2	0.2	0.0

Figure 7. Conceptual Mina do Barroso mine ore feed on an annual basis



Mining Costs

A contract mining model was developed for the potential development by Minesure using the schedules shown in **Table 5 and Figure 7.**

The mining plan developed for the Project will see the first four years of mining taking place in the Grandao pit which is close to the plant and waste dump. Accordingly, only one 80t excavator and five 60t dump trucks are required, as well as the ancillary equipment, because the mining production

rates are low and haulage distances are short. From year five onwards, the scheduled mining movement increases significantly, and a larger excavator and additional trucks are utilised to meet demand.

To build up the mining costs budget, quotations were obtained from equipment suppliers for the supply and maintenance of the nominated equipment.

Based on standard equipment production capacities the fleet is estimated to comprise:

- 120t excavator (year 5-11)
- 80t excavator (year 1-4)
- 60t excavator
- 60t dump trucks (year 1-4)
- 90t dump trucks (year 5-11)
- 45t Dozers
- Graders
- Water cart
- Hydraulic drill rigs

Contractor establishment, mobilisation and demobilisation costs were estimated from historical data for similar types of equipment. Pre-production expenditure is incurred constructing access roads, clearing sites and pre-stripping for ore mining. Operational staffing levels were estimated annually for both a contractor and the Company to ensure there was sufficient supervision and technical support to maintain efficient production. Company offices, equipment and vehicles costs were estimated to service the Company's employees.

A contractor type scenario was simulated by amortizing the purchase cost of each item of equipment over its predicted lifespan and applying finance and insurance charges to derive an annual operating cost. Most items are replaced after five years except trucks which have a lifespan in excess of ten years. Purchase costs were based on current supplier budget quotes.

Variable costs apply to each item of equipment and are dependent on the number of hours the machine operates.

The variables are:

- Fuel
- Ground Engaging tools
- Tyre or tracks
- Planned Maintenance
- Unplanned Maintenance
- Lubricants
- Operator

These cost components were combined to derive an annual operating cost for each machine which were then applied to the mining schedule to generate an overall cost per tonne for mining detailed in **Table 6**.

Table 6. Concept mine production plan unit rates and annual operating cost estimate

Unit Operating Costs	Total	Yr1	Yr2	Yr3	Yr4	Yr5	Yr6	Yr7	Yr8	Yr9	Yr10	Yr11	Yr12
Total OPEX US$ M	283.75	14.92*	14.92	14.92	14.92	20.57	26.72	31.33	33.15	36.14	36.14	36.14	3.85
Unit Operating Cost US$/t mined	3.16	4.46	4.46	4.46	4.46	4.34	4.47	3.63	3.17	2.40	2.40	2.40	2.75

* Year 1 includes pre-stripping activity costs, which occurs prior to year 1 production

Concentrator

A series of metallurgical tests were conducted at Nagrom in Perth, Western Australia on representative samples from the NOA, Reservatorio and Grandao deposits under the supervision of independent metallurgical consultant Noel O'Brien of Trinol Pty Ltd. This information was used to develop the Scoping Study flow sheet for a combined 1.3 Mtpa DMS and flotation circuit with an overall plant availability of 85% for the recovery of spodumene with tails thickening and dry stack which produces a spodumene product that contains 6% Li_2O.

The processing of ore to produce concentrates will comprise several stages:

- Crushing: Multiple stage crushing and then milling utilising high-pressure grind rollers "HPGR" to a P80 -4mm/+0.5mm to prepare the ore to be to be fed to a DMS Circuit;
- Dense Media Separation Circuit: The DMS circuit will separate material based on its specific gravity, using fine ferrosilicon as a separation medium. The middling and tailing streams from the DMS circuit are directed to the ball mill circuit for fine grinding in preparation for floatation;
- Fine Grinding Circuit: The fine grinding circuit will reduce material produced by the DMS to a final product size of P80 =106 µm, suitable for flotation;
- Flotation Circuit: The milled ore will be subjected to four stages of spodumene flotation to recover a spodumene concentrate including one rougher stage and three cleaner stages. A conventional flotation methodology will be used;
- Tailings: Pulp discharged from the tailings thickener will be pumped directly to the filter press to recover the water and dry the tailings so that it can be dry stacked on the tailings storage;
- Concentrate Handling: The spodumene flotation concentrate will be thickened, filtered and stored in a purpose-built storage facility immediately adjacent to the processing plant, prior to transport off-site to the port of *Leixões*; and
- Reagents: Ferrosilicon, flocculant and flotation reagents will be the main reagents used within the process plant. A spodumene specific collector (oleic acid), dispersant sodium silicate, soda ash and frother will be used in both the rougher, cleaner and recleaner flotation circuits.

See simplified process flowsheet in **Figure 3.**

A co-product flowsheet option was also investigated to recover feldspar and quartz from the flotation tailings, which is also shown in the diagram. These industrial minerals have existing markets primarily for use in the manufacture of glass, ceramics and building materials. The aim of the co-product circuit is to subject the flotation tailings to further processing with to produce both a saleable feldspar and quartz whilst also reducing the amount of tailings material which needs to be stored onsite.

A summary of parameters for the concentrator flowsheet is shown in **Table 7.**

Table 7. Concentrator Production

Parameter	Unit	Value
Feed rate	Mtpa	1.3
Contained lithium in feed	Ktpa	13
Concentrate production (dry)	ktpa	~175
Tailings production (solids only)	Mtpa	0.7
Water consumption	KL/t of feed solids	0.3
Feldspar production (dry)	Ktpa	276
Quartz production (dry)	Ktpa	173

All the co-products produced are assumed to be sold on an annual basis.

Dry Stack Tailings

The Project has been designed to optimise the sustainability and environmental features of the Project by recovering co-products from the feed and by dry stacking tailings and so eliminating the need for a tailings dam and reducing the overall footprint of the operation.

The filtered tailings from the concentrator are trucked to a tailings stack located south of the proposed concentrator site. Bulldozers and compactors are used to place the tailings on the stack. The Tailings Storage Facility will be constructed in lifts to a stable, overall slope of 3H:1V. This construction method will facilitate final reclamation, revegetation, and closure of the dry stack TSF. Any runoff from the TSF will be collected in sedimentation ponds and pumped back to the process facility for reuse. The use of dry tailing stacking is more labour and capital intensive than traditional tailings dams which has resulted in some slight increases in CAPEX and OPEX compared to similar sized projects.

Transport and Logistics

Savannah investigated several options for the transport of the spodumene concentrate. Bulk and containerised options were considered and pricing obtained for:

- Transport by road (approx. 150km) to a customs warehouse in Maia, ready for shipment
- Transport from Maia warehouse to Port of *Leixões* (~9km)
- Shipping from Port of *Leixões* to a number of locations, including Dalian and Yantian in China

The pricing (**Table 8**) was used in the various studied process cases and location options. Bulk shipment was selected due to the reduced operational and logistical complexity compared to the other two options. For example, container loading requires additional equipment and personnel and there is the question on whether the containers are returned empty or whether there is an opportunity to return the containers to Portugal full for another industry.

Table 8. Concentrate Transport Costs (CIF China)

Parameter	US$/t of Concentrate
Mina do Barroso to Maia	18.64
Maia Storage Facilities	16.78
Maia to Port of *Leixões*	2.91
Ocean Freight – Bulk	34.48
Cost of Bulk Transport (US$/wet t)	**72.81**

This is shown separately in **Figure 8** as it is a sales and marketing cost, but it is included within the definition of C1 Cash Operating Cost.

Infrastructure

Infrastructure requirements for the mine, concentrator and chemical plants include:

- **Road**: for the mine/concentrator, roads are required for access to the site for the delivery of supplies and reagents and for the export of the spodumene concentrate. Roads will be required both for heavy vehicles associated with the mine production and tailings management, as well as, light vehicles used to support the operation of the concentrator. The road network should be designed to minimise the interaction between the heavy and light vehicles and minimise impacts on surrounding villages.
- **Power**: required for both the mine and concentrator. The largest individual consumers of power will be the key comminution equipment (e.g. HPGR, ball mill, etc.). Electricity will be supplied by the high-voltage power lines near the site to a power transformer that Savannah will need to licence and build. The licencing is done through DGEG services (Direção Geral de Energia e Geologia).
- **Water**: required to support the concentrator operations, almost all material from the mine will be subjected to some form of wet processing. Most of the water is recycled within the concentrator although a fresh water make-up is required to account for the water lost primarily as moisture content within the tailings and concentrate streams. Water will primarily be obtained from the dewatering of the proposed pits with additional water from bores and run-off if required.

CAPEX

<u>Mining</u>

The capital cost estimate for mining shown in Table 9 was developed using the contract mining model previously described. Pre-production costs include pre-stripping, access roads and clearing, Contractor costs include mobilisation, establishment and demobilisation and Owner's costs including office costs, vehicles and pit equipment.

Table 9. Summary of Estimated Mining CAPEX

Description	Costs (US$ M)
Pre-Production Costs	4.2
Contractor Costs	3.9
Owners Costs	1.0
Sub Total	**9.1**
Contingencies at 25% (Initial CAPEX)	2.3
Total Mining CAPEX	**11.4**

Plant

The capital cost estimate for the concentrator shown in the following table was based on preliminary major equipment sizing and recent pricing for similar-sized equipment. The total installed plant cost was then built-up using accepted industry factors (based on the major equipment cost) for installation, minor equipment, trades, bulks and indirect costs. Installation labour costs and productivity were adjusted for the plant location. A contingency of 25% was applied to the total direct and indirect costs. The estimate accuracy is -25% to +35%. The CAPEX for the plant has been broken into three key areas (**Table 10**), the tailings filter required to dry stack the tailings, the spodumene concentrator and the additional CAPEX required to produce co-products from the tailings stream.

Table 10. Summary of Plant CAPEX

Item/Description	Concentrator (US$ M)	Tailings Filters (US$ M)	Co-products (US$ M)	Total (US$ M)
Major Equipment Costs	19.0	3.1	5.6	27.7
Mobile Equipment	1.7	3.9	0.0	5.5
Equipment Installation	2.9	0.5	0.8	4.2
Minor Equipment (including reagents)	1.9	0.3	0.6	2.8
Earthworks	3.3	0.5	1.0	4.8
Concrete	5.5	0.9	1.6	8.0
Structural Steel	3.8	0.6	1.1	5.6
Piping	3.8	0.6	1.1	5.6
Electrical Control & Instrumentation	8.8	1.4	2.6	12.8
Architectural	1.1	0.2	0.3	1.6
Total Direct Costs	**51.7**	**11.9**	**14.8**	**78.4**
EPCM	7.2	1.8	2.2	11.2
Equipment Freight	1.9	0.3	0.6	2.8
Temporary Construction Facilities	1.4	0.4	0.4	2.2
First Fills	0.5	0.1	0.1	0.7
Spares	1.0	0.2	0.3	1.4
Owners Costs	1.9	0.5	0.6	3.0
Total Indirect Costs	**13.9**	**3.2**	**4.2**	**21.3**
Contingency	**16.4**	**3.8**	**4.8**	**24.9**
Total Plant Costs	**81.9**	**18.9**	**23.8**	**124.6**

Total

Table 11. Summary of Total CAPEX

Description	Costs (US$ M)
Mining CAPEX (excluding contingencies)	9.1
Plant CAPEX (excluding contingencies)	99.7
Initial CAPEX (excluding contingencies)	**108.8**
Contingencies (25%)	27.2
Initial CAPEX	**136.0**
LOM Sustaining CAPEX	11.8
Total LOM CAPEX	**147.8**

OPEX

The concentrator operating cost estimate were calculated at a scoping level of accuracy (-20% / +35%). The addition of the co-products recovery increases the operating cost by approximately US$2.3M per year. **Table 12** indicate the operating cost estimate, exclusive of any co-product credits and spodumene transport costs.

Table 12. Summary of Operation Expenditure (OPEX)

Description	Total LOM US$ M	US$/t of concentrate	US$/t of concentrate (Years 1 -4)
Direct Costs	**517.3**	**265.3**	**202.4**
Mining	**276.4**	**141.7**	**78.9**
Concentrator	**240.9**	**123.5**	**123.5**
Reagents	74.5	38.2	38.2
Consumables	30.6	15.7	15.7
Utilities	62.2	31.9	31.9
Maintenance	18.3	9.4	9.4
Labour	55.3	28.4	28.4
General and Admin	**35.9**	**18.4**	**18.4**
Total	**553.2**	**283.7**	**220.8**

Tenure

The Mina do Barroso Project comprises 100% of the C100 Mining Lease which is 75% owned by Savannah Resources and 25% by Slipstream Resources and is currently undergoing a 250m expansion along its northern boundary. Savannah has received written confirmation from the DGEG that on the basis of article 24 of Decree-Law no. 88/90 of 16 March and based on the resources allocated, exploited and intended, the article can be utilised to request the DGEG for an expansion up to 250m of the C100 Mining Lease in specific areas where a resource has been defined and the requirement for the expansion can be justified. This expansion and re-definition of the boundary is

currently underway in the Reservatorio area and, as a result, potential mineralisation in the area has been included into the Scoping Study.

Project Execution

Savannah is planning to fast track the Project into production, with the current target for the commencement of spodumene concentrate production being Q1 2020, with detail of the proposed timeline provided in **Figure 4.** Savannah has issued Requests for Proposals from a number of engineering consulting groups who could execute the planned fast track feasibility study with the contract expected to be let shortly.

The fast-track execution schedule is based on a number of key assumptions:

- The execution strategy considers the concentrator and TSF, assuming that the operation of the mine would be by a contractor and that the mine plan would be detailed during the concentrator and TSF engineering design.
- The fast-tracked execution schedule assumes timely environmental approvals for the Project. It is expected that an EIA/EIS would be required for the mine, but there may be a faster path if the Project(s) qualified as a Project of National Interest (PIN).
- Procurement activities for the concentrator will start early during the engineering cost study to enable early contract of long lead items. A period of 45 weeks was allowed for long lead items for the concentrator.
- The fast-tracked schedule is assumed to be completed in 2 phases, with; a Feasibility which is expected to take around 7 months to complete leading into a construction phase following all necessary approvals.
- TSF (dry stack) assumed to take 6 months (TSF land availability and local construction materials assumed).
- Concentrator assumed to take 9 months and finishing 3 months following long lead equipment arrival on site.
- Ramp up for the concentrator is expected to take 4-6 months to ramp up to full capacity.

Product Pricing

Independent product pricing forecasts have not been obtained as it is a scoping level study. Savannah plans to fast track the Project into production at a time when lithium concentrate prices are expected to be strong. Savannah has not established any contracts or committed any of its production pursuant to an off-take agreement at this time.

Forecasts for lithium prices are available from independent industry analysts and investment banks and/or brokers. Spodumene concentrate prices have been derived from an average of leading market players including Roskill, investment banks and industry peer, as well as a current market review of suppliers, consumers, global consumption, demand and supply trends. The LOM average price assumption is USD$685/tonne for a 6% Li_2O concentrate.

An analysis of recent announcements showed that Kidman Resources 18/3/2018 and Altura 30/04/2018 utilised a LOM spodumene price of USD$685 and USD$690 respectively providing good support the pricing assumptions used in the Study. On 18/05/2018 Pilbara Minerals released a presentation (page 15) which indicated that prices as high as USD$1,314 (delivered, VAT inclusive) was being paid for 6% spodumene in China, a price almost double what Savannah has assumed in this Study.

The prices which have been used for the co-products in the Study have been derived from a combination of market analysis and discussions with potential offtake partners. The LOM prices used were feldspar USD$39/t, quartz USD$33/t and bulk pegmatite USD$15/t.

Financial Analysis

The technical and economic parameters that were developed for the Study were used in a real-dollar MS-Excel based financial model to estimate cash future cash flows in US dollars and evaluate the Project cases based on net present value (NPV), internal rate of return (IRR) and payback period. Savannah selected an 8% discount rate for the evaluation and sales of quartz, feldspar and pegmatite were included in the model.

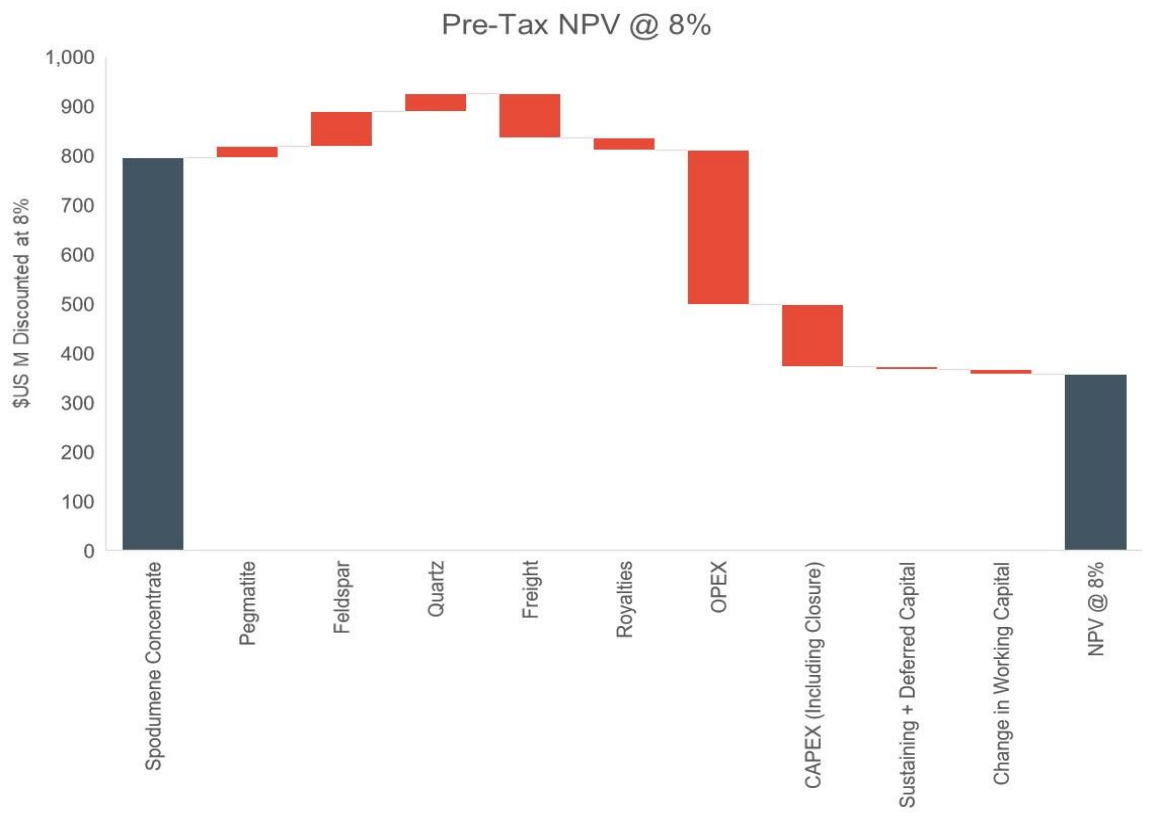
The results of the financial analysis for the mine and concentrator are provided in **Table 1** and **Table 13.**

Table 13. Summary of Financial Results

Description	Unit	Base Case
Pre-Tax NPV_8	US$ M	356
Post-Tax NPV_8	US$ M	241
Pre-Tax IRR	%	63.2
Post-Tax IRR	%	48.6
Pre-Tax Payback Period	Years	1.7
Post-Tax Payback Period	Years	2.1

The waterfall chart below illustrates the discounted life of mine cash flows to make up the pre-tax NPV. The plant operating costs are the main component influencing the NPV. The cash flow model assumes that all products produced are sold on an annual basis.

Figure 8. Discounted life of Pre-Tax cash flows



Sensitivities

A sensitivity analysis was done to evaluate the impact of key factors which influence the NPV and IRR results. The sensitivity chart for NPV and IRR pre-tax is given below. Spodumene price has the strongest influence on the NPV and IRR results, followed by concentrate Li_2O recovery.

Figure 9. Pre-Tax NPV Sensitivity Analysis

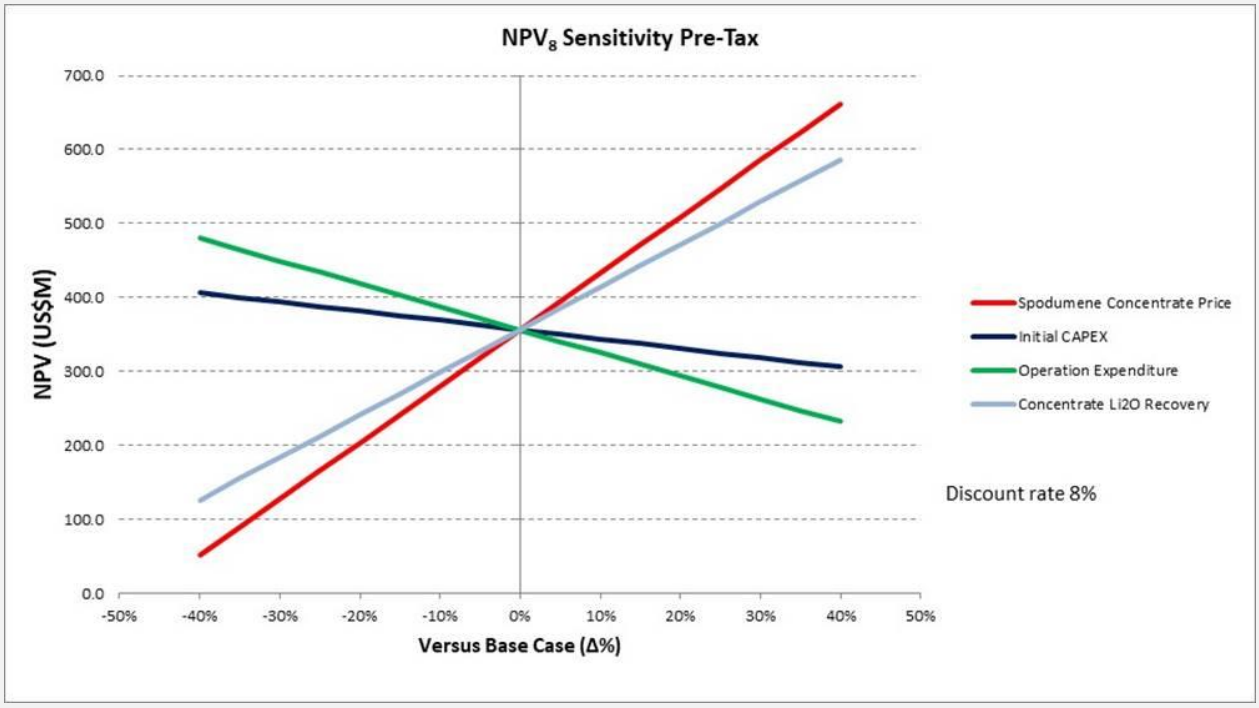
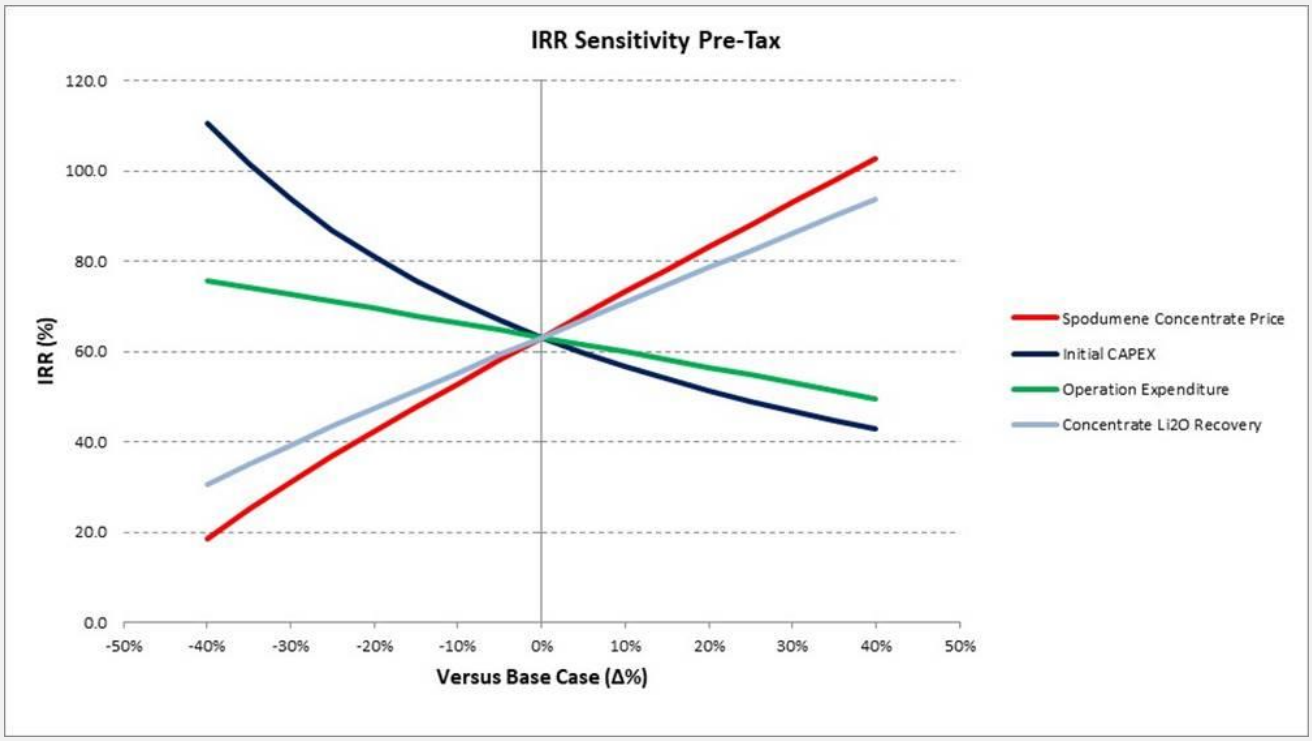


Figure 10. Pre-Tax IRR Sensitivity Analysis



The Study indicates Mina do Barroso is a very robust project with downside protection from its ceramic co-products with excellent potential to deliver long term stable cashflows and shareholder returns.

****ENDS****