Olaroz resource upgraded 2.5x to 16.2 million tonnes LCE Confirmation of strong project economics for Olaroz stage 2

HIGHLIGHTS

Allkem

- The 2022 Interim Upgraded Resource substantially expands Allkem's resource in the Olaroz basin from 6.4 million tonnes (Mt) lithium carbonate equivalent (LCE) to 16.2 Mt LCE, with 5.1 Mt of Measured resource and 4.6 Mt of Indicated resource, with the remainder in Inferred resource status
- Total Allkem resources at the Olaroz and immediately adjacent Cauchari basins are now 22.5 Mt LCE in all resource categories, making it one of the largest lithium resources in the world
- The lithium grade of the Olaroz salar Measured resource (0-200 m) is 648 mg/l, with the underlying Indicated resource (200-350 m in the north, 200-450 m central and south) at 657 mg/L. The further underlying Inferred resource grade is 663 mg/l
- The 2022 Interim Upgraded Resource is restricted to solely beneath the Olaroz salar surface. The resource estimate is limited at depth by the gravity geophysical survey basement topography, which drilling now suggests underestimates the basin depth
- Exploration carried out by Allkem and Advantage Lithium (100% Allkem) demonstrates brine at economic concentrations continues over extensive areas south beneath the Archibarca delta towards Allkem' s Cauchari Resource and north towards the Rosaria delta, with the resource open in both directions
- As well as supporting the 25,000 tonnes per annum expansion in capacity of the Olaroz Lithium Facility to a total 42,500 tonnes per annum capacity, the 2022 Interim Upgraded Resource will together with Allkem's Cauchari resources, underpin further expansion of the Olaroz Lithium Facility to meet soaring global demand
- Economic analysis of the Stage 2 expansion (not including Stage 1, AKE 66.5%) demonstrates a pre-tax NPV_{10% real} of US\$2,674 million and pre-tax IRR of 192% on a 100% basis. Post tax analysis delivers an NPV10 of US\$1,704 million and an IRR of 137% on a 100% basis

Allkem Managing Director and CEO, Martin Perez de Solay said, "This material increase in resource confirms the world class status of the Olaroz basin and complements the high-quality Sal de Vida project and James Bay which is one of the best hard rock projects in North America."

"The combined 22.5 Mt resource across Olaroz and Cauchari underpin further material expansions of production to provide the lithium that is essential for the growing decarbonisation by fleet electrification. The pre-tax NPV of nearly US\$2.7 billion for the Stage 2 expansion alone clearly illustrates how additional capacity is highly value accretive to Allkem."

"Allkem continues to contribute to the global solution for climate change through the provision of low carbon footprint lithium chemicals produced in areas of low or no water stress while contributing to the local economy and communities," Mr Perez de Solay said.



ECONOMIC ANALYSIS OF STAGE 2 OF THE OLAROZ LITHIUM FACILITY ON A STANDALONE BASIS

Capital Cost Summary

The total capital cost estimate is US\$376 million, consisting of US\$347 million in direct capital costs and US\$29 million in indirect capital costs. This represents an increase over the US\$330 million estimated in late 2019. As previously announced, this is attributable to additions to the project scope (camp, roads and water supply increases) and the lengthy delays incurred due to Covid-19.

Capex Breakdown		
Direct Capex		
Wells	US\$m	27
Brine Handling	US\$m	26
Ponds	US\$m	111
Liming Plant	US\$m	22
LCP & SAS	US\$m	122
BOP	US\$m	21
Camps	US\$m	18
Total Direct	US\$m	347
Indirect Capex		
Indirect costs	US\$m	11
Contingency	US\$m	18
Total Indirect	US\$m	29
Total Capital Cost Direct + Indirect	US\$m	376
Capital Intensity	US\$/tpa Cap	15,032

Table 1: Capex breakdown

Funding

Funding for Stage 2 comprises a US\$180 million project finance facility with the balance provided by shareholder loans (75% AKE, 25% Toyota Tsusho Corporation).

Operating Costs

Site operating cash costs for the LOM are estimated at US\$3,206/t. This cost represents an improvement on pre-covid estimates due to more favourable consumable unit rates.

The operating cost estimate for the Stage 2 expansion was prepared by Worley in collaboration with Allkem. The cost estimate excludes indirect costs such as distributed corporate head office costs for corporate management and administration, marketing and sales, exploration, general project and technical developments; and other centralised corporate services.

Table 2 below provides a summary of the estimated LOM annual unitary cost by category. No inflation or escalation provisions were included. Subject to the exceptions and exclusions noted below, the aggregate annual FOB cash operating costs for the Stage 2 Project are estimated to be approximately US\$80 million per year for a nominal year of operation.



Reagents represent the largest operating cost category (44.5%), then labour (19.3%) followed by operating consumables (7.7%) and maintenance (7.6%).

LOM Operating Cash Cost		
Costs		
Lime	US\$/t LCE	438
Soda Ash	US\$/t LCE	989
Electricity	US\$/t LCE	169
Natural Gas	US\$/t LCE	189
Operating Consumables	US\$/t LCE	247
Packaging	US\$/t LCE	75
Labour	US\$/t LCE	620
Maintenance	US\$/t LCE	243
Camp	US\$/t LCE	136
Freights & Customs	US\$/t LCE	19
G&A	US\$/t LCE	80
Total Operating Costs	US\$/t LCE	3,206
Cost Breakdown		
Variable Costs	US\$/t LCE	1,691
Fixed Costs	US\$/t LCE	1,514
Total Operating Costs	US\$/t LCE	3,206

Commodity Prices

Wood Mackenzie has provided the following update effective March 2022.

Lithium prices continue to outperform expectation in 2022. In 2021, spot prices for lithium carbonate and lithium hydroxide almost quadrupled to reach prices around US\$30,000/t, and in the first quarter of 2022, spot prices have breached the US\$50,000/t mark for both battery-grade lithium carbonate and battery-grade hydroxide.

While supply has been growing, it has been struggling to keep up with strong demand from the EV sector. In 2021, incentives implemented across Europe boosted EV sales and spurred stronger lithium demand. At the same time, EV sales in China return to record levels that further boosted demand, especially for battery-grade lithium carbonate used in LFP cathodes.

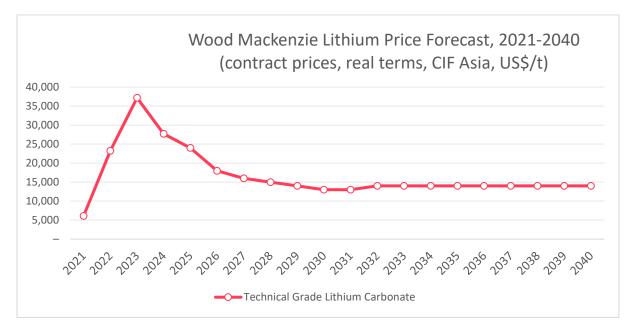
Despite the short-term imbalance in the market, it is difficult to find justification in the market fundamentals for the price increases seen in the spot market. Part of the additional demand is likely created by every link in the supply chain boosting inventories slightly to create a buffer against supply chain delays. The aggregated additional demand for lithium will therefore be substantial and could have contributed to the market sentiment.

Wood Mackenzie believes the elevated lithium spot prices in Q1 2022 are not sustainable in the long term and prices will decrease in the short to medium term to reflect market fundamentals. Spot prices are expected to decline in the second half of 2022. The declining trend is expected to continue as supply catches up with demand and the market moves into surplus in the mid 2020s. Contract prices are expected to follow a similar trend with a delay due to the lag built into price mechanisms in long-term contracts. Prices are expected to trend towards the long term incentive prices by the end of the decade.



Demand for technical-grade carbonate from industrial sectors is forecast to grow in line with economic growth, Technical-grade lithium carbonate, however, lends itself very well to be reprocessed into battery-grade lithium chemicals. This is an established process occurring in Chile, US, China and soon in Japan. The ability to re-process the product into battery-grade lithium chemicals will ensure that prices will increase in line with prices of battery-grade lithium chemicals.

The Wood Mackenzie price forecast utilised in this analysis is shown below:





Economic Evaluation Results

The current project execution schedule considers achieving full production beginning CY24 and average annual technical grade lithium carbonate production is anticipated to be 25,000 t/yr, for Stage 2 only from an average annual wellfield head grade of 0.067% Lithium. A 40 year life has been assumed for the project, which is based on the substantial resources defined in the project. No residual value has been included in the analysis. Product sales are assumed to be free-on-board South America.

The key outcomes of the economic analysis are shown below:



Table 3: Summary economics

Summary Economics				
Production				
LOM	yrs	40		
First Production	Date	H2 CY22		
Ramp Up	months	12-18		
Capacity	tpa	25,000		
Investment				
Development Capital Costs	US\$m	376		
Development Capital Intensity	US\$/tpa Cap	15,036		
Cash Flow				
Operating Costs	US\$/t LCE	3,206		
Avg Sale Price (TG)				
Wood Mackenzie 1Q 2022	US\$/t LCE 14,44			
Financial Metrics				
NPV @ 10% (Pre-Tax)	US\$m	2,674		
NPV @ 10% (Post-Tax)	US\$m	1,704		
NPV @ 8% (Post-Tax)	US\$m	1,632		
IRR (Pre-Tax)	%	192%		
IRR (Post-Tax)	%	137%		
Payback from production start	yrs	1.7		
Tax Rate	%	35%		

Sensitivity Analysis

A sensitivity analysis was performed on production volume, commodity price, capital costs and operating costs.

The figure below shows the impact of changes in key variables on the Project's pre-tax unleveraged net present value.



Figure 2: Unleveraged NPV sensitivity chart



2022 OLAROZ INTERIM UPGRADED RESOURCE

Estimated Resources

The resource estimate is outlined in the following tables presenting the lithium and lithium carbonate tonnages. The resource is broken out by property ownership, with the bulk of the resource within the Sales de Jujuy joint venture with Allkem (66.5%) Toyota Tsusho (25%) and Jujuy Energía y Minería Sociedad del Estado (8.5%) ("JEMSE"). Allkem holds additional 100% owned properties to the north of Olaroz.

				Mean Specific				
			s Million	Yield Porosity			Tonnes	
Classification	Area km ²	Thickness m	m³	%	m³	Li mg/L	Li	Tonnes LCE
			Allken	n SdJ JV				
Measured 0-200	103.3	200	20,452	6.5%	1,338	646	864,000	4,600,000
Indicated 200-450	103.3	250	19,117	5.7%	1,095	667	730,000	3,890,000
Indicated 200-350	103.3	150	3,273	4.8%	157	560	88,000	470,000
Measured and Indicated	103.3	0-350/0-450	42,842	6.0%	2,590	650	1,682,000	8,960,000
Inferred total	103.3	350/450 - >650	29,656	5.3%	1,570	654	1,030,000	5,470,000
		Ola	roz Lithiur	n (Allkem 100%)			
Measured 0-200	103.3	0-200	1,913	7.7%	148	673	100,000	530,000
Indicated 200-450	103.3	250	723	4.2%	30	830	25,000	130,000
Indicated 200-350	103.3	150	925	4.1%	38	631	24,000	130,000
M&I	103.3	0-350	3,562	6.1%	216	687	149,000	790,000
Inferred total	103.3	350 - >650	6,267	4.0%	249	718	180,000	950,000
Measured and Indicated TOTAL							1,831,000	9,750,000
Inferred TOTAL							1,210,000	
GRAND TOTAL							3,041,000	

Table 4: Updated interim resource estimate contained lithium

- JORC definitions were followed for mineral resources.
- The Competent Person for this Mineral Resource estimate is Murray Brooker, MAIG, MIAH.
- No internal cut-off concentration has been applied to the resource estimate. The resource is reported at a zero mg/l cut-off, given the consistent grade of the deposit, with brine extending beyond the edge of the salar
- Numbers may not add due to rounding. Page 1 values are for combined SdJ and Olaroz Lithium properties, hence the difference with Table 4 above
- Lithium is converted to lithium carbonate (Li2CO3 = LCE) with a conversion factor of 5.32.

This 2022 Interim Upgraded Resource supersedes the 2011 Resource completed as part of the Olaroz Feasibility study. This 2022 Interim Upgraded Resource does not discount production to date from within the resource.

Project background

An estimate of the Olaroz salar resource was undertaken in 2011 as part of the project Feasibility Study, prior to commencement of construction of Stage 1 of the Olaroz Lithium Facility. That estimate identified a Measured and Indicated Resource of 6.4 Mt of LCE over an area of 93 km² from surface to a maximum depth of 200 metres (the **2011 Resource**).

Following installation of the Stage 1 production wellfields at Olaroz several deeper wells were installed below 200 m in depth and subsequently utilised for Stage 1 production. This deeper drilling intersected high porosity and permeability sand units, with flow rates of over 30 litres per second (I/s)



that initiated evaluation of the deeper resource potential of the basin. Information from these wells was used to provide an Exploration Target in October 2014, outlining between 1.6-7.5 Mt of LCE located below the 200m level (the **2014 Exploration Target**) in the salar.

Allkem's Cauchari tenements, formerly owned by Advantage Lithium, are contiguous to the south of the Olaroz properties. In 2019 a further 4.8 MT of Measured and Indicated Resource and 1.5 Mt of Inferred Resource was estimated in this area (the **2019 Cauchari Resource**). The 2019 Cauchari Resource is believed to occupy the southern continuation of the same aquifers present in the Olaroz salar, which are connected beneath the Archibarca delta (the gravel area where the Olaroz ponds and plant are located). The Cauchari resource is not extracted as part of the Olaroz Stage 2 development.

Classification	Tonnes LCE	
Measured	1,850,000	
Indicated	2,950,000	
Measured & Indicated	4,800,000	
Inferred	1,500,000	
Total	6,300,000	

Table 5 Cauchari April 2019 resource estimate contained lithium carbonate

• JORC and CIM definitions were followed for mineral resources.

• The Competent Person / Qualified Person for this Mineral Resource estimate is Frits Reidel, CPG.

No cut-off concentrations have been applied to the resource estimate

• Lithium is converted to lithium carbonate (Li2CO3) with a conversion factor of 5.32.

Since 2011, material amounts of new information have been obtained from exploration and production activities at Olaroz. This included geological and production data from Stage 1 production and monitoring holes, generally drilled to 200m but with some to 350m and 450 m, and the Stage 2 expansion production and monitoring holes to depths of between 450 and 650 metres. Additional information has also come from drilling in Cauchari, a 1,408 m deep exploration hole north of the production holes in Olaroz and geophysical surveys over the whole basin.

Current Stage 2 work program

Drilling of 15 new production wells for Stage 2 production (Figure 3) is approximately 70% complete. Production wells are being installed to depths between 450 m and 650 m to produce brine from deeper levels in the salar on a 1 km grid spacing in the central to eastern area of the salar. In addition to the production wells a number of diamond drill holes provide core and brine samples and allow the installation of monitoring wells. Ten production wells have been commissioned so far and are producing approximately 220l/s at an average of 22l/s, which is considerably higher than the Stage 1 design of 10l/s per hole.

Samples from the wells and new diamond drill holes were sent to external and internal laboratories for porosity and chemical analysis. This information and downhole geophysics were used to update the geological model, which supports the resource estimate update. The geological model, sample results, Stage 1 well performance and pumping tests on the new Stage 2 production wells are the key inputs which have been used to develop a new groundwater model for the Olaroz basin by specialist external consultants.

The newly completed wells reached depths between 390m and 650 m. The lithium concentrations recorded an average lithium grade of 675 mg/L and varied from 574 mg/L to 795 mg/L. Further drilling



information and analytical results are displayed in Appendix A below.

The increase in geological knowledge in the Olaroz basin has led to modifications of the geological model with improvements in porosity, permeability and brine concentration data.

Drilling will continue through 2022 for completion of the Stage 2 production wells. It is expected that the 2022 Interim Upgraded Resource will be updated after the installation of the remaining production wells and new exploration drilling off the salar to evaluate production options for further expansion. Additional diamond drilling will be undertaken to provide porosity information that is required to upgrade inferred resource to indicated.

Property position

Allkem holds an extensive property position across the Olaroz and Cauchari basins (Figure 3). At Olaroz, Allkem owns 66.5% of properties via Sales de Jujuy SA (**SDJ**), a joint venture company with Toyota Tsusho Corporation (25%) and JEMSE (8.5%).

Properties held by SDJ north of the Olaroz salar have had minimal drilling, limited to several 54m deep holes drilled in initial exploration in 2010. Resources have not yet been defined in these properties.

In addition to its ownership interests via SDJ, Allkem also owns, via Olaroz Lithium, 100% of five additional properties in the north of the Olaroz salar, which have also not yet been drilled.

Allkem owns properties in the east and west of the Cauchari basin immediately to the south of the Olaroz resource. A pre-feasibility study (**PFS**) was completed in 2019 by Advantage Lithium (now 100% Allkem) with resources and reserves defined for the purposes of supporting a proposed stand-alone development.

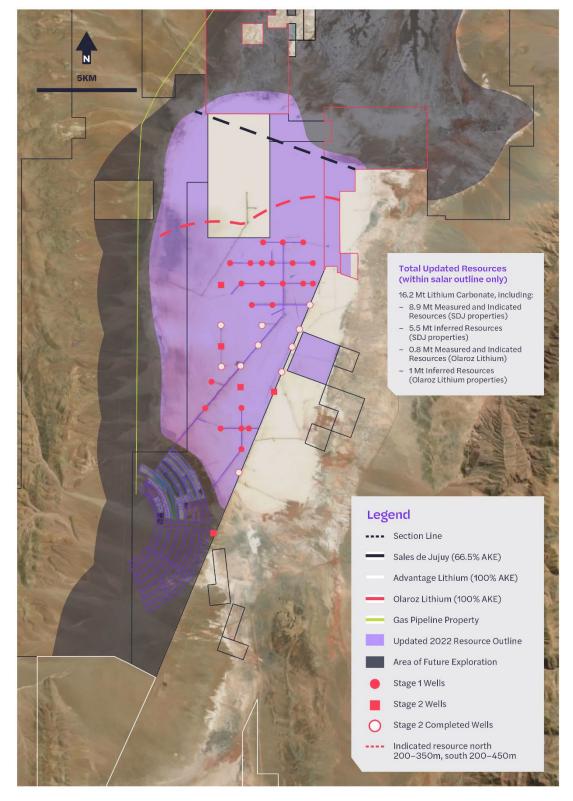
Olaroz Basin geology

Exploration activities since Allkem acquired the properties in 2008 have consisted of extensive geophysical programs and drilling over the Olaroz basin. Geophysical programs have included AMT electrical surveying, and vertical electrical soundings to define the lateral extents of the brine beneath alluvial sediments, around the margins of the salar to constrain the geological and hydrogeological models and assess areas for brine prospectivity off the salar. The northern SDJ and 100% Allkem properties have had minimal exploration to date, while geophysics indicates prospectivity for brine beneath alluvial and deltaic sediments north of the Olaroz salar in Cateo 498.

Additional geophysics has included an extensive gravity and magnetic survey across the basin that provided information on the basin depth and corroborated the early geophysical interpretation which indicated the basin is more than 1 km deep.



Figure 3: Distribution of the new production holes for Stage 2 production



Olaroz and Cauchari Properties and Resources



Since the exploration drilling conducted between 2008 to 2011, for the 2011 Resource estimation, more extensive drilling undertaken for exploration, test production and production well installation has provided information to depths of 650 m in Olaroz and better defined the basin geology. Additionally, one deep exploration hole has been drilled at the north end of the production area to a depth of over 1400m, without intersecting basement. This drilling led to development of a mixed salar basin model, with five separate geological and hydrogeological (hydrostratigraphic) units above the basement, defined by geological and geophysical logging of holes (refer to Figures 4 and 5) as follows:

- 1. UH1 Upper evaporite deposits, porous halite, clay, sand and silt
- 2. UH2 Alluvial fans on the western and eastern margins of the salar, which contain brine beneath brackish water
- 3. UH3 Mixed sediments with clay and sand intervals
- 4. UH4 Evaporite deposits, principally halite, with clay silt and sand interbeds
- 5. UH5 Sand units, interbedded with clay and silt. Sandy material is sourced from the historical western margin of the basin and becomes progressively deeper in the east of the basin

The geological interpretation across Olaroz is also consistent with the independent interpretations on adjacent projects based on drilling conducted by Allkem and Advantage Lithium in Cauchari and the work conducted by Lithium Americas Corp (Exar) in Cauchari, being the southern continuation of the Olaroz structural basin.

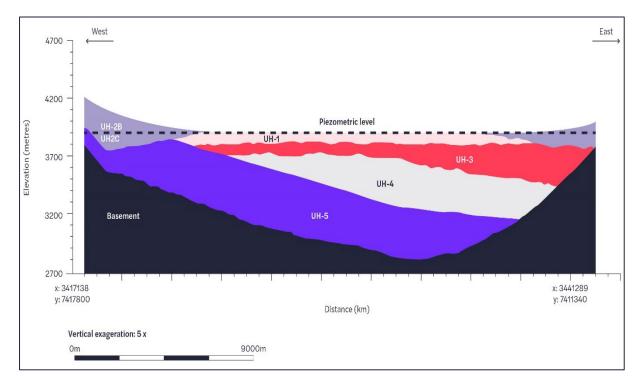
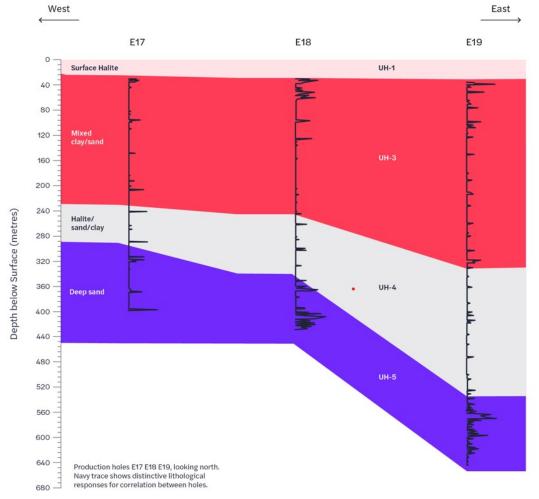


Figure 4: Geological model of the Olaroz salar



Figure 5: Cross section through the centre of the salar, showing the geological units and depth of drilling



Hydrogeology sampling background

Allkem began exploration of the Olaroz project in 2008 and has built up extensive knowledge of the salar since that time. Original drilling on the project included twenty sonic holes drilled to a depth of 54 m across the salar. This was accompanied by drilling of six diamond holes to 200 m depth. All these drill holes were geophysically logged and porosity samples were taken every 1.5 to 6 m for systematic characterisation of the different geological units.

Systematic interval brine sampling was also undertaken in the holes drilled for the original resource using bailer equipment, showing low coefficients of variation (averaging 0.18 over the 200m deep exploration holes and 0.19 for 54 m deep sonic drill holes on the salar). Two test production wells were installed for the feasibility study. One of these wells was subsequently incorporated into the southern wellfield for Stage 1 production. Pumping since 2013 has confirmed the original pumping test results, with the well (PD02) delivering brine to the Stage 1 ponds at an average grade of 782 mg/l.

The northern and southern wellfields for Stage 1 were established with wells installed on a 1 km spacing, generally to a depth of 200m but with some to 350m, with wells pumped since 2013. The



brine flows from the production wells have sustained stable lithium brine grades over this period with brine grades generally consistent with the results of the 2011 exploration drilling and characterisation of brine grades across the salar. Brine grades on the salar do not show major changes by lithology type, with the most significant changes related to the halite units and concentration of sulphate and boron.

The Stage 1 production wells and exploration holes however do show a systematic variation in brine grade laterally across the salar with higher grades in the central part of the salar and lower grades towards the west and east. Interestingly, recent deeper production wells (from 450 to 650 m deep) for Stage 2 have encountered higher grade brine in the west of the salar (new production wells E12, E17 and E19 averaging 768, 692 and 752 mg/l respectively – see Figures 3, 5) than the original exploration drilling to 200 m in the same area. All production wells are subjected to pumping tests to establish the well hydraulic parameters in addition to measurements from geophysical logging prior to beginning production from the wells.

Olaroz is a mixed salar predominantly consisting of clastic sediments with a surficial and a deeper halite layer. The sequence is considered to act as a leaky aquifer with the entire sequence of sediments contributing brine flow to wells. Higher brine flows are obtained from intervals with high sand content and higher permeability with the brine grades generally comparable between geological units based on the diamond drill sampling and low CV values of lithium brine results from this historical sampling. Despite small scale variability in the sedimentation the five hydrostratigraphic units in the salar display fairly consistent porosity characteristics internally based on the geophysical logging.

Restrictions on activities due to Covid-19 have been extensive in Argentina since March 2020 and are ongoing. Consequently, progress of the diamond drilling and rotary production drilling programs has been disrupted with less drilling completed than planned.

As a result, this resource is considered an interim estimate which will be updated when the remaining planned drilling is completed.

Historical diamond drilling showed lithium brine concentrations have a low variability (CV) vertically down hole, with systematic variation across the salar and with lower brine grades generally closer to the salar margins. Test pumping from the 2011 feasibility study for Stage 1 of the Olaroz Lithium Facility has been confirmed by long term pumping from well PD02 (Southern wellfield) and adjacent wells in the wellfield. Consequently, the pumping results of production wells are considered a reasonable and reliable substitute for systematic down hole interval brine samples, given the accumulated knowledge at Olaroz and higher density of data at the project relative to predevelopment projects.



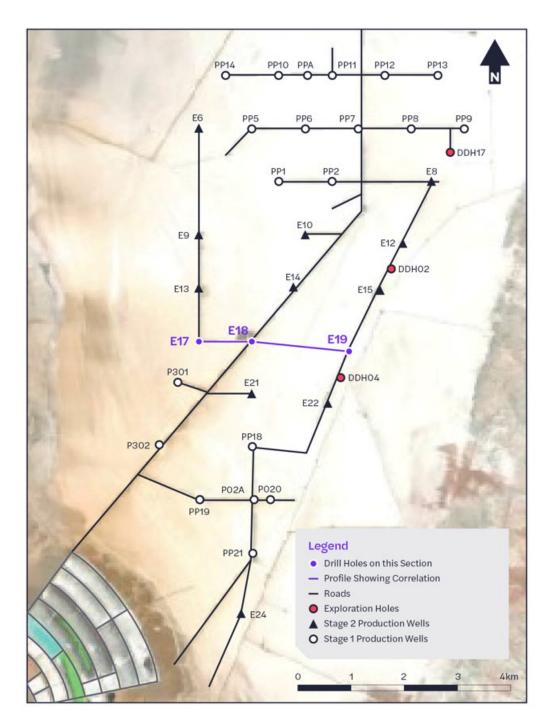


Figure 6 – Olaroz well locations – showing the location of the section in Figure 5

Brine sample quality control

Brine samples from the current drilling program have been collected during the variable rate and constant rate pumping tests undertaken on wells following their completion. These tests were carried out to determine the potential production flow rates and to confirm pump selection for holes and long term operation. Samples were taken in triplicate with the primary sample analysed at the Olaroz Lithium Facility laboratory where they were analysed with AA equipment for lithium, and ICP equipment for other major cations and anions.



Brine standards were prepared to check the performance of the Olaroz laboratory and were submitted for analysis along with samples. The brine standards were also analysed in external laboratories, as part of a "round robin" check on performance of the external and Olaroz site laboratory. Alex Stewart Argentina in Jujuy, Argentina was selected as the primary external laboratory to assay the brine check samples. That laboratory is ISO 9001 accredited and operates according to Alex Stewart Group standards consistent with ISO 17025 methods at other laboratories.

Porosity sample quality control

Three diamond holes have been completed to date for the expansion program. Cores have been collected systematically through these holes with samples collected in transparent polycarbonate tubes. These tubes were retrieved from the core barrel and stored in core trays prior to the laboratory sample being cut from the base of the tube, with 30 cm core subsamples sent to the Geosystems Analysis (**GSA**) laboratory in the USA.

GSA utilized the Rapid Brine Release method (Yao et al., 2018) to measure drainable porosity and the total porosity. The Rapid Brine Release (**RBR**) method is based on the moisture retention characteristics (**MRC**) method for direct measurement of total porosity (Pt, MOSA Part 4 Ch. 2, 2.3.2.1), specific retention (Sr, MOSA Part 4 Ch3, 3.3.3.5), and specific yield (Sy, Cassel and Nielson, 1986). A simplified Tempe cell design (Modified ASTM D6836-16) was used to test the core samples. Brine release was measured at 120 mbar and 330 mbar of pressure for reference (Nwankwor et al., 1984, Cassel and Nielsen, 1986). Bulk density, particle size analyses and specific gravity were also determined on selected core samples.

For quality control, a collection of paired samples representative of the range in lithology types were selected for testing using other laboratory techniques also used to measure drainable porosity. These are the Relative Brine Release Capacity (RBRC, Stormont et. al., 2011) method of the DB Stephens Laboratory and the Centrifuge Moisture Equivalent of Soils (Centrifuge, ASTM D 6836-16) method by Core Laboratories (Houston, Texas). These methods provide an estimate of variability in the definition of the drainable porosity across different laboratory methods.

Geophysical Logging

Drill holes in the Stage 2 expansion campaign were geophysical logged by contractor Zelandez, with a number of geophysical tools (natural gamma, resistivity, conductivity, borehole magnetic resonance, ultrasonic borehole images) in order to maximise the collection of data from the drilling. Borehole Magnetic Resonance (**BMR**) is a geophysical tool that was developed by the oil industry to measure porosity and permeability in-situ in wells to assist reservoir studies. The Borehole Magnetic Resonance tool was designed and built in Australia to operate in highly saline environments like salars.

The BMR tool used for the drilling campaign is purpose built for logging of exploration diameter drill holes. The tools are factory calibrated in Australia and maintained regularly by the service provider. The data acquisition and processing methodology gives information on the total porosity, drainable porosity (specific yield), specific retention and provides a computation of permeability and hydraulic conductivity with a vertical resolution varying from 5-15 cm, providing much more information than individual core samples analysed for porosity with a spacing every 3 or more metres.

Porosity cores from the three diamond holes drilled to date for the Stage 2 expansion were analysed in the Geosystems Analysis laboratory in the USA. This laboratory has extensive experience analysing



salar cores having undertaking analyses on numerous salar projects. Porosity values from the laboratory sampling were compared to the BMR porosity log. While some differences are noted the general ranges of porosity values for the different hydrostratigraphic values are considered comparable.

Salar sediments display short range vertical and lateral variability (within a metre or over metres to 10's of metres) due to changes in the depositional environment over time. This results in vertical and lateral changes in drainable porosity. BMR drainable porosity (Specific yield) measurements were often lower than corresponding laboratory measurements. BMR porosity values are considered to be more conservative than laboratory measurements, as cores may become disturbed during transportation to the laboratory.

Salar sediments are subject to compaction as they are buried with compaction generally resulting in a decrease in total and drainable porosity with depth although not all sediments are affected equally by compaction.

Holes drilled for the original feasibility study were logged with a neutron tool as borehole magnetic resonance technology was not available to the lithium industry in 2011. The neutron tool measures the hydrogen index of the formation (solids and brine). Neutron porosity is the result of applying a simple equation using the neutron measurement and two parameters. For the 2011 Resource neutron log data was compared with laboratory data to develop an algorithm for porosity across the resource area. BMR technology is considered more accurate for porosity definition in the salar environment and has superseded use of neutron logs.

There are some differences observed between porosity measurements made with the neutron and BMR logs through comparable sediments. The drainable porosity of this updated interim resource is lower than the 2011 Resource partly due to the greater depth of this resource and some compaction of sediments, the geological intervals intersected (greater thicknesses of halite) and due to a reduction in comparable porosity values due to the type of geophysical logging.

In particular it is noted the original drilling to 200 m intersected only the upper part of the halite layer. The ongoing drilling for the Stage 2 expansion has defined the full thickness of the evaporite/halite unit UH4. This unit has a generally lower porosity than overlying and underlying clastic sedimentary units due to the compaction of halite with depth. Similarly clastic units also undergo some compaction with depth and consequently the overall porosity of the newly estimated resource is lower compared to the original resource in the upper 200 m of the salar.

Estimate data sources

Average production well brine chemistry values, from throughout pumping of the wells, have been used as inputs for the resource estimation, in addition to the interval samples historically collected in the upper 200 m. This is considered an acceptable approach in this situation, given the level of information available in the Olaroz salar, hydrogeological continuity between drill holes, comparison between historical interval samples and pumped brine concentrations and the history of pumping data available. Additional 650 m deep diamond drilling is planned as part of the expansion program which will be used in a further update to the resource once drilling is complete.

Geophysical logging in the deeper holes has confirmed generally consistent drainable porosity and permeability characteristics throughout the clastic sediments with higher porosities and



permeabilities associated with thicker more sand dominated intervals.

Mineral Resources

Estimation of a brine resource requires definition of:

- The aquifer distribution (in this case restricted by drilling to the salar outline)
- The distribution of drainable porosity (specific yield) values
- The distribution of elements in the brine defined by drilling
- The external limits (geological or property boundaries) of the resource area

The resource grade is a combination of the aquifer volume, the drainable porosity (portion of the aquifer volume that is filled by brine that can potentially be extracted) and the concentration of elements of interest in the brine.

The Olaroz aquifer system is not a conventional water supply style aquifer, based on a discrete geological unit, but rather a layered sequence of sediments that contributes brine flow to production wells. More permeable sand and gravel units provide relatively higher flows. The surface outline of the salar is used to delimit the area of the resource estimate. The 2022 resource covers 113 km², slightly larger than the 2011 Resource area (93 km²) and covers some small properties east of and outside the main body of the properties (Figure 3). Brine saturated sediments are known to extend beneath alluvial sediments surrounding the salar but to date insufficient drilling has been carried out in these areas to support resource estimation there.

The resource estimate is limited laterally by the property boundaries (Figure 3) with other minority property owners (Exar and other owners) in the salar to the east and north of the properties owned by Allkem and SDJ. The resource estimate is limited at depth by the gravity geophysical survey basement topography, which drilling suggests underestimates the basin depth.

Within the salar the three-dimensional distribution of the different hydrostratigraphic units was defined using Leapfrog software, with these units based on geological and geophysical logging observations. Because the resource is entirely within the salar, there are no locations where brackish or fresh water are overlying brine within the resource area.

The porosity data from interval samples in the upper 200 m and the BMR downhole geophysics was used to generate a block model across the salar area, applying ordinary kriging to the composited drainable porosity data.

The distribution of lithium and other elements was estimated from point sampling data from the upper 200 m of the model, where samples are typically spaced every 6 m in the 200 m holes and 3 m or less in the 54 m holes. Below the upper 200 m the resource was estimated based on the pumped samples from the production wells, with a single value per hole representing the average pumped lithium value.

The block model was constructed with 500 by 500 blocks, with 20 m vertical extent (Figure 7 and Figure 8). Only the portion of the block inside the salar outline is reported in the resource. The resource estimate was undertaken using Datamine software, with variograms developed for the point samples from the upper 200 m. Estimation was undertaken using ordinary kriging. The ordinary kriging method is the most commonly used kriging method.



The resource was estimated using four passes with the search strategy. The results of the first two passes are nominally equated to blocks classified as Measured and Indicated, with the latter two passes equating to blocks classified as Inferred. The resources were defined across the salar outline, and defined over different depths, reflecting drilling density and confidence. Future drilling is likely to bring additional resources into the Indicated and Measured classification.

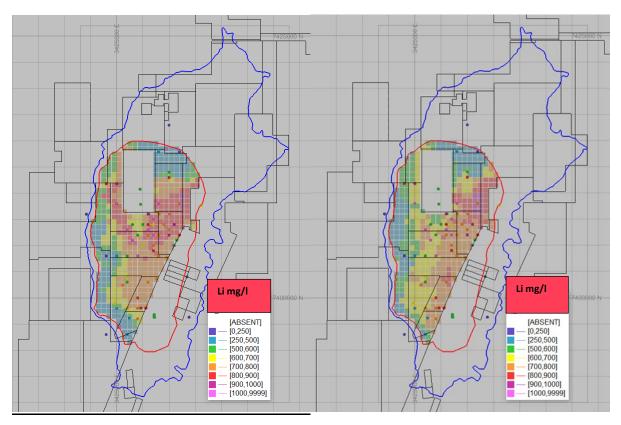


Figure 7: Lithium grades (mg/L) at 100 m (left) and 275 below surface (right)



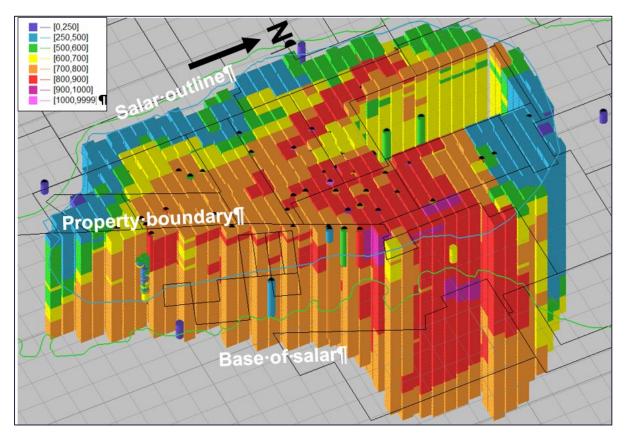


Figure 8: Resource blocks in mg/l, excluding small properties to the east (for clarity)

Measured Mineral Resources

A 'Measured Mineral Resource' is that part of a Mineral Resource for which quantity, grade (or quality), densities, shape, and physical characteristics are estimated with confidence sufficient to allow the application of Modifying Factors to support detailed mine planning and final evaluation of the economic viability of the deposit.

Geological evidence is derived from detailed and reliable exploration, sampling and testing gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes, and is sufficient to confirm geological and grade (or quality) continuity between points of observation where data and samples are gathered.

A Measured Mineral Resource has a higher level of confidence than that applying to either an Indicated Mineral Resource or an Inferred Mineral Resource. It may be converted to a Proved Ore Reserve or under certain circumstances to a Probable Ore Reserve.

Extraction of brine is ongoing from 1 km spaced, 200 m deep, production wells pumping for a period in excess of seven years. Wells have a drilling density of approximately 1 per 2 km² in the production well field areas. Extensive exploration drilling was previously conducted across the salar to 200 m depth. The Measured resources are almost all within 2.5 km from drill holes across the salar, as suggested by Houston et. al., 2011 as an appropriate drilling spacing for Measured resources in clastic salars. On the basis of the available data the resource to 200 m depth is classified as a Measured resource.



This is reported at a zero mg/l lithium cut-off, as the entire Olaroz salar contains brine with an elevated lithium concentration to the salar boundary.

Indicated Mineral Resources

An 'Indicated Mineral Resource' is that part of a Mineral Resource for which quantity, grade (or quality), densities, shape and physical characteristics are estimated with sufficient confidence to allow the application of Modifying Factors in sufficient detail to support mine planning and evaluation of the economic viability of the deposit.

Geological evidence is derived from adequately detailed and reliable exploration, sampling and testing gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes, and is sufficient to assume geological and grade (or quality) continuity between points of observation where data and samples are gathered.

An Indicated Mineral Resource has a lower level of confidence than that applying to a Measured Mineral Resource and may only be converted to a Probable Ore Reserve.

Geological continuity established by deeper drilling below 200 m, BMR and other geophysical logging of holes, and generally gradual changes in lithium concentration provide the basis for classifying the brine between 200 and 350 or 450 m below surface as an Indicated resource. A radius of influence of 5 km around 450 m plus depth drill holes has been used to define the Indicated resource to a depth of 450 m, in keeping with the suggestion of Houston. et. al., 2011 regarding drill hole spacing and classification in clastic salars. Because the resource estimate is limited by the salar and property outlines the distance from drill holes to the outer boundary of the 450 m deep Indicated (and other classifications) of resource is typically 4 km, or less.

The northern area of the salar has had less drilling, and only limited drilling below 200 m, with a number of production holes to 350 m, this has been classified as Indicated resource, to the northern boundary of the salar, with this area within a 5 km radius of holes to 350 m depth. The boundary between the 450 and 350 m deep classification of Indicated resources is the surface defined by the combined radii of 5 km around drill holes (red line Figure 3). Laboratory porosity samples are relatively limited in this depth interval to 450 m, however similar sediment intervals are present above 200 m, where porosity characteristics have been established from hundreds of laboratory analyses. Ongoing extraction by pumping of brine from wells up to 450 m deep since 2014 provides confidence as to the extractability of brine from the resource to this depth.

Inferred Mineral Resources

An 'Inferred Mineral Resource' is that part of a Mineral Resource for which quantity and grade (or quality) are estimated on the basis of limited geological evidence and sampling. Geological evidence is sufficient to imply but not verify geological and grade (or quality) continuity. It is based on exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes.

An Inferred Mineral Resource has a lower level of confidence than that applying to an Indicated Mineral Resource and must not be converted to an Ore Reserve. It is reasonably expected that the majority of Inferred Mineral Resources could be upgraded to Indicated Mineral Resources with continued exploration.



The Inferred Mineral Resource is defined below 350 m or 450 m (depending on location in the salar) and the base of the basin, based on the gravity geophysical survey, which shows the basin is generally deeper than 650 m. There are currently 10 production wells installed below 350 m, with production wells for the expansion project installed between 450 and 650 m deep between the existing northern and southern wellfields. The deep hole drilled in the north of the salar confirms locally the salar sediments extend to below 1400 m depth. Drilling has not intersected the base of the salar sediments, suggesting the basin may be deeper than estimated from the gravity survey.

Taking account of the distribution of brine grade and porosity to date (as determined by BMR geophysics) there is a sufficient level of confidence to classify the resources extending to the bottom of the basin as Inferred Resources. It is likely that additional drilling could convert these to a higher confidence resource classification.

Mineral reserve

An updated hydrogeological model has been developed for the project using the DHI Feflow software. This model is being tested with the results of recent drilling and will be used to develop a maiden reserve estimate once stage 2 production wells have been completed.

Further exploration potential

The resource is open laterally off the salar to the north, south and west, beneath gravels that surround the salar. The resource may also extend at depth beyond the base of the basin interpreted by gravity geophysics. Previous limited drilling and geophysical surveys indicate the brine body is likely to extend south beneath the Archibarca delta to Cauchari, where drilling by the company and Advantage Lithium defined a resource in 2019. Similarly, brine extends west of the salar and north under the Rio Rosario delta, where future drilling is required to define resources.

One deep hole has been drilled to 1,408m slightly north of the current production wells, but to date no drilling in the Olaroz basin has yet intersected the basement bedrock. Gravity surveys also support a model of large areas of similar depths in this part of the basin.

ENDS

This release was authorised by Mr Martin Perez de Solay, CEO and Managing Director of Allkem Limited.

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IMPORTANT NOTICES

This investor ASX/TSX release (**Release**) contains general information about the Company as at the date of this Release. The information in this Release should not be considered to be comprehensive or to comprise all of the material which a shareholder or potential investor in the Company may require in order to determine whether to deal in Shares of Allkem. The information in this Release is of a general nature only and does not purport to be complete. It should be read in conjunction with the Company's periodic and continuous disclosure announcements which are available at allkem.co and with the Australian Securities Exchange (**ASX**) announcements, which are available at <u>www.asx.com.au</u>.

Technical Information and Competent Persons' Statements

The information in this report that relates to Olaroz Exploration Results and Mineral Resources is based on information compiled by Mr Murray Brooker, a Competent Person who is a Member of the Australian Institute of Geoscientists, a 'Recognised Professional Organsation' (RPO) included in a list posted on the ASX website from time to time. Mr Brooker is an independent consultant employed by Hydrominex Geoscience Pty Ltd and 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'. He is also a "Qualified Person" as defined by Canadian Securities Administrators' National Instrument 43-101. Mr Brooker consents to the inclusion in this announcement of the matters based on this information in the form and context in which it appears.

Any information in this release that relates to Cauchari Project Mineral Resources is extracted from the release entitled "Cauchari JORC Resource increases to 4.8 million tonnes Measured + Indicated and 1.5 million tonnes Inferred LCE" released on 19 April 2019 and the report entitled "<u>NI43-101 Technical Report Cauchari JV Project — Updated Mineral Resource</u> <u>Estimate"</u> which is available to view on <u>www.allkem.co</u> and <u>www.asx.com.au</u>. The Competent Person for this technical report and Mineral Resource estimate was Mr Frits Reidel, CPG, of Atacama Water (Formerly FloSolutions Chile). 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 Resource and Ore Reserve 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.

Technical information relating to the Company's Olaroz project contained in this release is derived from, and in some instances is an extract from, the technical report entitled "Olaroz Resource Update and Olaroz Lithium Facility Stage 2 Technical Study" (Technical Report) which has been reviewed and approved by Murray Brooker (Hydrominex Geoscience Pty Ltd) as it relates to geology, drilling, sampling, exploration, QA/QC, mining methods and mineral resources and Mr Mike Gunn (Gunn Metals) as it relates to site infrastructure, capital cost, operating cost estimates, , mining cost, financial modelling and economic analysis 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 www.sedar.com.

Forward Looking Statements

Forward-looking statements are based on current expectations and beliefs and, by their nature, are subject to a number of known and unknown risks and uncertainties that could cause the actual results, performances and achievements to differ materially from any expected future results, performances or achievements expressed or implied by such forward-looking statements, including but not limited to, the risk of further changes in government regulations, policies or legislation; the risks associated with the continued implementation of the merger between the Company and Galaxy Resources Ltd, risks that further funding may be required, but unavailable, for the ongoing development of the Company's projects; fluctuations or decreases in commodity prices; uncertainty in the estimation, economic viability, recoverability and processing of mineral resources; risks associated with development of the Company Projects; unexpected capital or operating cost increases; uncertainty of meeting anticipated program milestones at the Company's Projects; risks associated with investment in publicly listed companies, such as the Company; and risks associated with general economic conditions.

Subject to any continuing obligation under applicable law or relevant listing rules of the ASX, the Company disclaims any obligation or undertaking to disseminate any updates or revisions to any forward-looking statements in this Release to reflect any change in expectations in relation to any forward-looking statements or any change in events, conditions or circumstances on which any such statements are based. Nothing in this Release shall under any circumstances (including by



reason of this Release remaining available and not being superseded or replaced by any other Release or publication with respect to the subject matter of this Release), create an implication that there has been no change in the affairs of the Company since the date of this Release.

Not for release or distribution in the United States

This announcement has been prepared for publication in Australia and may not be released to U.S. wire services or distributed in the United States. This announcement does not constitute an offer to sell, or a solicitation of an offer to buy, securities in the United States or any other jurisdiction, and neither this announcement or anything attached to this announcement shall form the basis of any contract or commitment.



APPENDIX A: DRILL HOLE COLLARS

Well	UTM_X	UTM_Y	Depth	Lithium concentration	Status
				(mg/L) *	
E11	3428657	7403993	650		Planned
E2	3431200	7408999	650		Planned
E23	3428034	7399903	650		Planned
E25	3426328	7395855	450		Planned
E26	3425534	7393885	450		Planned
E27	3424746	7391934	450		Planned
E28	3423000	7389000	450		Planned
E3	3426999	7407664	450		Planned
E4	3426000	7407664	450		Planned
E5	3429191	7409000	650		Planned
E7	3426000	7405000	450		Planned
E1	3431120	7407782	1200		In progress
E12	3429810	7403841	650	775	In production
E13	3426000	7403000	450	596	In production
E15	3429374	7402970	650	574	Completed
E21	3427000	7401000	450		In progress
E22	3428413	7400830	650		In progress
E6	3426000	7406000	450		In progress
E10	3427942	7403996	390	757	In production
E12	3429810	7403841	644	779	In production
E14	3427830	7403005	582	566	In production
E17	3426003	7401998	410	691	In production
E18	3427000	7402000	434	679	In production
E19	3428819	7401821	636	746	In production
E24	3426794	7396871	594	580	In production
E8	3430393	7405013	558	795	In production
E9	3425998	7403999	450	590	In production
P301	3425585	7401225	290	725	In production
P302	3424826	7399489	310	632	In production
PD02A	3427009	7399007	450	664	In production
PD20	3427318	7399024	150	845	In production
PP1	3427500	7405000	350	665	In production
PP10	3427500	7407000	210	548	In production
PP11	3428500	7407000	205	618	In production
PP12	3429500	7407000	198	724	In production
PP13	3430500	7407000	197	983	In production
PP14	3426500	7407000	197	552	In production
PP15	3428060	7407999	198	545	In production
PP16	3429060	7407999	198	730	In production
PP17	3430060	7407999	199	802	In production



Well	UTM_X	UTM_Y	Depth	Lithium concentration (mg/L) *	Status
PP18	3427000	7400000	197	838	In production
PP19	3426000	7399000	198	750	In production
PP2	3428500	7405000	199	780	In production
PP21	3427000	7398000	198	735	In production
PP5	3427000	7406000	200	595	In production
PP6	3428000	7406000	199	714	In production
PP7	3429000	7406000	198	821	In production
PP8	3430000	7406000	195	969	In production
PP9	3431000	7406000	199	887	In production
PPA	3428042	7406988	195	780	In production



APPENDIX B

JORC Table 1 – Section 1 Sampling Techniques and Data related to Olaroz Stage 2 expansion drilling (Criteria in this section apply to all succeeding sections.)

Criteria	JORC Code explanation	Commentary
Sampling techniques	 Nature and quality of sampling (eg cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling. Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used. Aspects of the determination of mineralisation that are Material to the Public Report. In cases where 'industry standard' work has been done this would be relatively simple (eg 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (eg submarine nodules) may warrant disclosure of detailed information. 	 Holes were drilled using the rotary drilling technique. Drill cuttings were collected to identify the sediment type and compare observations with downhole geophysical logs. Mud samples were taken during drilling to evaluate changes in properties such as fluid density, electrical conductivity and dissolved ions. A comprehensive suite of down hole geophysical logs was run open hole, once holes reached total depth. This provided additional information on the lithologies encountered during drilling. This included in the deep 1408 m hole. The downhole logging was undertaken by the company Zelandez, who have extensive experience with geophysical logging on salt lake projects. Drill cuttings were described by experienced geoscientists, and the results compared with results from nearby holes and with the geophysical logs. Samples were not collected for assay from the cuttings, as the primary objective of the holes was to confirm the geology to the depth of drilling and install production wells. Cuttings were used to describe the lithology. Samples for brine analysis were taken from the production wells when cleaned up and pumped. Qualitative changes in brine conditions were also evaluated during drilling. Three diamond holes were drilled in this program, with core samples collected in polycarbonate (Lexan) tubes and selected intervals analysed for porosity laboratory in an independent lithology (Geosystems Analysis in the USA).
Drilling techniques	• Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if	 Rotary drilling with a tricone bit was used to drill the entire length of the production holes, reaching depths between 450 and 650 m, and also used for the deep hole to 1408 m. Brine from a surface trench (low lithium content) was used to mix drilling muds, to develop a thick wall cake in the rotary holes and maintain hole stability.



Criteria		JORC Code explanation		Commentary
		so, by what method, etc).	•	Three diamond holes were drilled in this program, with the purpose of collecting porosity information and brine samples.
Drill sample recovery	•	Method of recording and assessing core and chip sample recoveries and results assessed. Measures taken to maximise sample recovery and ensure representative nature of the samples. Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.	•	Drill cuttings were described by experienced geoscientists, and the observations compared with results from nearby holes and with the geophysical logs. Sample recovery was aided by the use of appropriately prepared drilling mud to remove cuttings from the hole. Cutting samples were not analysed chemically and descriptions were a qualitative evaluation of the lithologies encountered in the hole. There is no relationship between sample recovery and ion concentrations in the brine in this case. Core sample recovery for the three recent diamond holes was between 86.1 and 88.6%, which is higher than historical diamond drilling conducted to 200 m depth. Core sampling is enhanced by use of polycarbonate (Lexan) triple tubes. Unconsolidated salt lake sediments have much lower core recoveries than hard rock deposits.
Logging	•	 Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies. Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography. The total length and percentage of the relevant intersections logged. 	•	Drill cuttings were described by experienced geoscientists, and the observations compared with results from nearby holes and with the geophysical logs. This has provided a consistent stratigraphy, supporting resource estimation and mining studies. Cutting logging is of a qualitative nature and results were compared with the quantitative geophysical logs to interpret the lithologies encountered in the hole. All intersections with sample recovery were logged.
Sub-sampling techniques and sample preparation	•	If core, whether cut or sawn and whether quarter, half or all core taken. If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry. For all sample types, the nature, quality and appropriateness of the sample preparation technique. Quality control procedures adopted for all sub-sampling stages to maximise	•	Cuttings were only used to identify the lithology and were not used for chemical analysis, and were only sub- sampled to collect representative reference samples. Mud samples were taken from the returned drilling muds and analysed for concentrations of lithium and other elements, which maintained elevated and similar concentrations through the drill hole. Due to the rotary mud nature of this drilling the mud samples are considered only qualitative and not quantitative. Consequently, the mud sample analytical results are NOT reported in this release and NOT used for resource estimation. Brine samples from production wells are from



Criteria		JORC Code explanation		Commentary
	•	Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling. Whether sample sizes are appropriate to the grain size of the material being sampled.		wells were developed and cleaned or had been in production, in some cases for more than 5 years, with consistent lithium concentrations.
Quality of assay data and laboratory tests	•	The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total. For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc. Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (i.e. lack of bias) and precision have been established.	•	The brine samples (from production wells and pumping tests conducted once wells were fully installed and cleaned) were analysed at the Olaroz site laboratory. Quality control/Assurance samples were used by the Olaroz site laboratory, which is not a certified commercial laboratory. Standards accompanying brine samples in the Olaroz laboratory have been analysed in commercial laboratories as part of a laboratory "round robin" analysis Duplicate samples have been analysed in commercial laboratories as part of QA/QC procedures. Results were generally within acceptable limits. Downhole geophysical tools were provided by geophysical contractor Zelandez. These are calibrated periodically to produce consistent results. BMR tools are calibrated yearly in Australia.
Verification of sampling and assaying	•	The verification of significant intersections by either independent or alternative company personnel. The use of twinned holes. Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols. Discuss any adjustment to assay data.	•	Brine analyses are from pump testing post installation of production wells, are quantitative analyses and were reviewed by different company personnel. Laboratory data (from spreadsheets) is loaded directly into the project database by company personnel.
Location of data points	•	Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation. Specification of the grid system	•	The holes were located initially with a hand-held GPS and are subsequently surveyed by a certified surveyor. Production wells and diamond holes are drilled with a general spacing of 1 km between holes. The Project location is in zone 3 of the Argentine Gauss Kruger coordinate system with the Argentine POSGAR 94 datum.



Criteria		JORC Code explanation		Commentary
	•	used. Quality and adequacy of topographic control.		
Data spacing and distribution	•	Data spacing for reporting of Exploration Results. Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied. Whether sample compositing has been applied.	•	Lithological data was collected throughout the drilling from cuttings and geophysical logging. Historical diamond drilling was conducted to 200 m depth, with three recent diamond drill holes to 650 m depth. Due to the rotary drilling methodology samples for indicative brine chemistry, were not collected at regular intervals during drilling. Brine samples were collected from the pumping of wells, once wells were installed and cleaned (developed). The samples taken during the pumping tests are composite samples, sourced from multiple well screens throughout the wells where screens are installed (through much of the hole). Brine samples from historical diamond and sonic drilling were taken at a vertical spacing of 3 and 6 m to 54 m and nominally 6 m between 54 and 200 samples, with actual sampling irregular and depending on conditions. This information forms part of the resource estimate, along with more recent data.
Orientation of data in relation to geological structure	•	Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type. If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.	•	The salar deposits that host lithium-bearing brines consist of sub-horizontal beds and lenses of sand, silt, halite, clay and minor gravel, depending on the location within the salar. Drill holes are vertical and essentially perpendicular to these units intersecting close to their true thickness. Faults controlling basin development occur on the basin margins.
Sample security	•	The measures taken to ensure sample security.	•	Brine samples were moved from the drill site to secure storage at the camp on a daily basis. All brine sample bottles are marked with a unique label. Samples were transported from the camp to the laboratory for chemical analysis in sealed rigid plastic bottles with sample numbers clearly identified.
Audits or reviews	•	The results of any audits or reviews of sampling techniques and data.	•	No audits or reviews have been conducted at this point in time.



Section 2 - Reporting of Exploration Results

(Criteria listed in the preceding section also apply to this section.)

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings. The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.	 The Olaroz properties (operated by Sales de Jujuy for the joint venture between Allkem 66.5%, Toyota Tsusho 25% and JEMSE 8.5%) are located in the province of Jujuy in northern Argentina at an elevation of approximately 3,900 masl. Allkem also owns 100% of a number of other properties in the north of the Olaroz salar. The company has owned the majority of the properties for over 10 years The SDJ joint venture project comprises 52,391 ha in 37 mineral properties and the 9,475 ha in the 5 Olaroz lithium properties. The project has been in production since 2013. The mining operation is from a series of mining licenses (minas) permitted for production. These are surrounded by other mining licenses and exploration properties (Cateos). The project development was approved by the provincial government UGAMP technical committee in 2012, and received other approvals for project development in this time period. The project has an 8.5% participation by the provincial mining agency JEMSE, is subject to a royalty of 3% and an export tax of 4.5% of mine gate value. Toyota Tsusho and Allkem act as the joint marketing agent for lithium produced at the project. The tenements/properties are believed to be in good standing, with payments made to relevant government departments. The company maintains good relationships with the local government and government agencies and communities as part of operations. Many local inhabitants work at the Olaroz operation. Several peripheral properties have not yet been fully granted, as this is an extended process for mining leases in Argentina. Properties are within the Reserva Provincial de Fauna y Flora Olaroz-Cauchari (a regional flora and fauna reserve), as is the adjoining Exar project. This reserve allows for multiple uses, including agriculture and mining.
Exploration • done by other parties	Acknowledgment and appraisal of exploration by other parties.	 The properties were not subject to any exploration for lithium prior to Allkem (Orocobre) obtaining the properties. Significant exploration has been conducted immediately to the east and south of the Olaroz properties by Minera



Criteria		JORC Code explanation		Commentary
				Exar, resulting in a large resource and related reserve and a brine pumping project is currently in construction. Further south in Cauchari Olaroz subsidiary, Advantage Lithium has defined a 4.8 Mt LCE resource in Measured and Indicated categories and 1.5 Mt of Inferred resources. These three projects are all developed on different parts of the same lithium brine body.
Geology	•	Deposit type, geological setting and style of mineralisation.	•	The project is a lithium salt lake deposit, located in a closed basin in the Andean mountain range in Northern Argentina. The sediments within the salar consist of halite, clay, silt, sand and gravel which have accumulated in the salar from terrestrial sedimentation from the sides of the basin. Brine hosting dissolved lithium is present in pore spaces and fractures within unconsolidated sediments. Evaporation of brines entering and within the salt lake generates the concentrated lithium that is extracted by pumping out the brine. The sediments are interpreted to be essentially flat lying with unconfined aquifer conditions at depth Geology was recorded during drilling of the hole.
Drill hole Information	•	A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes: 1. easting and northing of the drill hole collar 2. elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar 3. dip and azimuth of the hole 4. down hole length and interception depth 5. hole length. If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the	•	 The holes are located utiling utiling of the fibre. The holes are located in the mining properties covering the Olaroz salt lake, centred around approximately 7402000N/ 3427000E and approximately 3930 m elevation, inZone 3 of the Argentine Gauss Kruger grid system, using the Posgar 94 datum. The drill holes are all vertical, (dip -90, azimuth 0 degrees). Collar coordinates and depths are provided in a table following the announcement. On the salt lake brine is present from within ~1 m of surface to the base of drilling. Lithological data was collected from the mud return cuttings as the hole was drilled and from the geophysical logging of holes. Previous sonic and diamond drilling core samples were collected in polycarbonate Lexan tubes and described in detail, with laboratory analyses made of the sediment porosity in several international laboratories.



Criteria		JORC Code explanation		Commentary
		case.		
Data aggregation methods	•	In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated. Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail. The assumptions used for any reporting of metal equivalent values should be clearly stated.	•	Brine samples were taken from pumping wells at the completion of pumping tests. Results during the pumping tests were analysed and compared, to ensure results were repeatable. The pumping well samples are composite samples that reflect inflows from different levels within the wells, which are screened at multiple levels throughout their depth. The lithium concentration in the pumped samples is an average of the concentration from different units with relatively higher and lower values than the average More permeable units contribute a higher proportion of the brine in the pumped samples. The pumped samples are considered to be sufficiently representative of the brine contained in sediments where the holes are drilled, based on previous comparisons with diamond drill holes to 200 m depth, which showed low vertical coefficients of variation (CV).
Relationship between mineralisation widths and intercept lengths	•	These relationships are particularly important in the reporting of Exploration Results. If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported. If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (eg 'down hole length, true width not known').	•	The sediments hosting brine are interpreted to be essentially perpendicular to the vertical drill holes, representing true thicknesses in drilling. The entire thickness of sediments is believed to be mineralized with lithium brine, with the water table within approximately 1 metre of surface. Lithium is hosted in brine in pores within the different terrestrial sedimentary units in the salt lake sequence.
Diagrams	•	Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.	•	Ddiagrams areprovided in the text showing the location of the properties, the drill holes and cross sections through the deposit, showing the correlation of geological units.
Balanced reporting	•	Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading	•	Data regarding the drilling and sampling has been provided in the release. A table is provided with the results of the pumping wells, which have provided the basis for estimation below 200 m depth.



Criteria	JORC Code explanation	Commentary
	reporting of Exploration Results.	
Other substantive exploration data	 Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances. 	• The company is currently conducting rotary drilling to obtain geological information, brine samples, and hydraulic parameters for the installation of additional production wells. This will also support an update of the resource estimation. The updated resource will be released when drilling is complete and this information is available.
Further work	 The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step- out drilling). Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive. 	• The company is currently installing 15 deep production wells for Stage 2 of the project, with additional diamond drill holes to be drilled and used as monitoring wells. The latter is planned to extend further north and south of the current resource area, to support definition of further resources in those areas (refer to the map with drill holes in the release). Comprehensive documentation outlining the resource drilling is planned for release when that program is complete.

Section 3 Estimation and Reporting of Mineral Resources

Criteria	JORC Code explanation	Commentary
Database integrity	 Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes. Data validation procedures used. 	 spreadsheets to the database. Data was checked for transcription errors once in the database, to ensure coordinates, assay values and lithological codes were correct
Site visits	• Comment on any site visits	• The Competent Person visited the site many times prior



Criteria	JORC Code explanation	Commentary
	undertaken by the Competent Person and the outcome of those visits. If no site visits have been undertaken indicate why this is the case.	 to the current drilling and sampling program and more recently has been prevented from visiting by Covid related limitations. Competent Person M Brooker was responsible for previously planning the location of the new production wells.
Geological interpretation	 Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit. Nature of the data used and of any assumptions made. The effect, if any, of alternative interpretations on Mineral Resource estimation. The use of geology in guiding and controlling Mineral Resource estimation. The factors affecting continuity both of grade and geology. 	 There is a high level of confidence in the geological model for the Project. There are relatively distinct geological units in essentially flat lying, relatively uniform, clastic sediments and halite. The drainable porosity data consists of extremely detailed data from geophysical logging, extensive historical porosity samples to 200 m deep and sparse porosity samples up to 650 m deep. Brine data is relatively sparse below 200 m, consisting of composite pumped samples from holes, which provide realistic information regarding brine concentrations. Any alternative interpretations are restricted to smaller scale variations in sedimentology and porosity, related to changes in grain size and fine material in units, as porosity is the key influence on the resource estimate. Geological units are identified in the geological and geophysical logging of holes and separated in the hydrostratigraphic model, where unit specific porosity characteristics are applied. Data used in the interpretation includes sonic, rotary and diamond drilling. Sedimentary processes affect the continuity of geology, whereas the concentration of lithium and potassium and other elements in the brine are related to water inflows, evaporation and brine evolution in the salt lake and are essentially independent of porosity.
Dimensions	• The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource.	 The lateral extent of the resource has been defined by the boundary of the salar and in the east and north the boundary with adjacent properties. On the salar the brine mineralisation covers 113 km². The top of the model coincides with the topography obtained from the Shuttle Radar Topography Mission (SRTM). The original elevations were locally adjusted for each borehole collar with the most accurate drill hole collar coordinates available. The base of the resource is the base of the basin, as interpreted from gravity geophysics. The depth of the basin is likely to exceed the depth interpreted from the geophysics, based on drilling to date. The basement rocks underlying the salt lake sediments have not yet been intersected in drilling.



Criteria	JORC Code explanation	Commentary
Estimation and modelling techniques	 The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a description of computer software and parameters used. The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data. The assumptions made regarding recovery of by- products. Estimation of deleterious elements or other non-grade variables of economic significance (eg sulphur for acid mine drainage characterisation). In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed. Any assumptions behind modelling of selective mining units. Any assumptions about correlation between variables. Description of how the geological interpretation was used to control the resource estimates. Discussion of basis for using or not using grade cutting or capping. The process of validation, the checking process used, the comparison of model data to 	 The resource estimation for the Project was developed in Datamine Software, with the geological model developed in Leapfrog software. The model is considered a reliable representation of the local lithology. Generation of histograms and box plots was conducted for the Exploratory Data Analysis for lithium. It should be noted the search radii are flattened ellipsoids with the shortest distance in the Z axis (related to the variogram distance). No outlier restrictions were applied, as distributions of the different elements do not show anomalously high values. No grade cutting or capping was applied to the model. The coefficient of variation in the brine results is low, reflecting the relatively homogeneous distribution of brine grades across the salar. Results from the primary porosity laboratory GSA are compared with results from check Core Laboratories. Potassium is the most economically significant element dissolved in the brine after lithium. Estimation of Lithium for each block used ordinary kriging. The presence of brine is not necessarily controlled by the lithologies and lithium and potassium concentrations are independent of lithology. Geological units had hard boundaries for estimation of porosity. Estimation of resources used drainable porosity data from BMR geophysical logs. The block size (500 x 500 x 20 m) reflects the thick and relatively homogeneous nature of the lithological units. No assumptions were made regarding selective mining units and selective mining is generally not feasible in brine deposits, where brine flows in response to pumping. No assumptions were made about correlation between variables. Lithium and potassium concentrations are not necessarily related in a potassium concentrations are not necessarily related to a particular lithology. The geological interpretation was used to define each geological unit and the salar boundary and property limit were
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Criteria	JORC Code explanation	Commentary
	drill hole data, and use of reconciliation data if available.	 Validation was perform using a series of checks including comparison of univariate statistics for global estimation bias, and visual inspection against samples on plans and sections. Visual validation shows an acceptable agreement between the samples and the OK estimates.
Moisture	• Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.	 Moisture content of the cores was Measured (porosity and density measurements were made), but as brine is extracted by pumping not mining the sediments moisture is not relevant for the resource estimation. Tonnages are estimated as metallic lithium and potassium dissolved in brine, with lithium values converted to a lithium carbonate tonnage using a conversion factor of 5.32.
Cut-off parameters	• The basis of the adopted cut- off grade(s) or quality parameters applied.	 No cut-off grade has been applied, with the resource reported at a zero mg/l cut off. Brine at economic lithium concentrations is present across the salt lake.
Mining factors or assumptions	• Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the mining assumptions made.	 The resource has been quoted in terms of brine volume, concentration of dissolved elements, contained lithium and their product lithium carbonate. No mining or recovery factors have been applied (although the use of the specific yield = drainable porosity is used to reflect the reasonable prospects for economic extraction with the proposed mining methodology). It should be noted that conversion of resources to reserves for brine deposits is lower than that for hard rock deposits. Dilution of brine concentrations may occur over time and typically there are lithium and potassium losses in both the ponds and processing plant in brine mining operations. However, potential dilution will be estimated in the groundwater model simulating brine extraction, to define a reserve. The conceptual mining method is recovering brine from the salt lake via a network of wells, the established practice on existing lithium brine projects. Detailed hydrologic studies of the lake have been undertaken (catchment and groundwater modelling) to evaluate the extractable resources and potential extraction rates
Metallurgical factors or assumptions	• The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for	 Lithium carbonate is currently produced on site via conventional brine processing techniques and evaporation ponds to concentrate the brine prior to processing Additional brine extracted for the Stage 2 expansion would be processed the same way, with refinements



Criteria	JORC Code explanation	Commentary
	eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.	related to optimisation of the process, learnt from operation of Stage 1
Environmental factors or assumptions	 Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made. 	 Impacts of the lithium carbonate production operation at the Olaroz salar include; surface disturbance from the creation of extraction/processing facilities and associated infrastructure, accumulation of various salt tailings impoundments and extraction from brine and freshwater aquifers regionally. Precipitated salts are collected in ponds and later returned to the salar. The project holds the necessary environmental permits for the current and Stage 2 production.
Bulk density	 Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples. The bulk density for bulk material must have been measured by methods that adequately account for void 	 Density measurements were taken as part of the drill core assessment. This included determining dry density and particle density as well as field measurements of brine density. Note that no mining of sediments is to be carried out, as brine is to be extracted by pumping and consequently sediments are not mined but the lithium and potassium is extracted by pumping. No bulk density was applied to the estimates because resources are defined by volume, rather than by tonnage. The salt unit can contain fractures and possibly vugs which host brine and add to the drainable porosity. However, salt units below 50 m depth are generally quite



Criteria	JOR	C Code explanation		Commentary
	•	spaces (vugs, porosity, etc), moisture and differences between rock and alteration zones within the deposit. Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.		compact
Classification	•	The basis for the classification of the Mineral Resources into varying confidence categories. Whether appropriate account has been taken of all relevant factors (ie relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data). Whether the result appropriately reflects the Competent Person's view of the deposit.	•	The resource has been classified in Measured, Indicated and Inferred resources categories based on the spatial distribution of data and confidence in the estimation. Measured and Indicated resource reflect higher confidence in the geological interpretation in the upper levels of the salar and the greater frequency of data, where there is current production. The Inferred resource underlies the Indicated and Measured resource and reflects the limited drilling in these areas. In the view of the Competent Person the resource classification is believed to adequately reflect the available data and takes into account and is consistent with the JORC code 2012 and the Australian Brine Guidelines.
Audits or reviews	•	The results of any audits or reviews of Mineral Resource estimates.	•	This Mineral Resource was estimated by independent consultancy H&S Consultants, with work supervised by the Competent Person Mr Brooker.
Discussion of relative accuracy/ confidence	•	Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate. The statement should specify whether it relates to global or local estimates, and, if local,	•	An assessment of the estimated blocks was made against the drill hole data on sections and found to be acceptable.



Criteria	JORC Code explanation	Commentary	
	state the relevant tonnages,		
	which should be relevant to		
	technical and economic		
	evaluation. Documentation		
	should include assumptions		
	made and the procedures used.		
	• These statements of relative		
	accuracy and confidence of the		
	estimate should be compared		
	with production data, where		
	available.		