Olaroz resource increases 27% to 20.7 million tonnes LCE

HIGHLIGHTS

- Olaroz resource increases 27% to 20.7 million tonnes (“**Mt”**) lithium carbonate equivalent (“**LCE”**), comprising 7.6 Mt of Measured Resource, 7.1 Mt of Indicated Resource and 6 Mt of Inferred Resource
- Total resources in the Olaroz-Cauchari basin are now 27 Mt LCE in all resource categories, confirming the basin’s status as hosting one of the largest lithium resources in the world
- The lithium grade of the Olaroz salar Measured Resource is 657 mg/l lithium, with the underlying Indicated Resource and Inferred Resource 612 mg/l and 604mg/l lithium respectively
- The recently acquired Maria Victoria property in the north of Olaroz contributed 2.8 Mt of the increase in resources, with the difference relating to expansion of the resource to the south following completion of the expansion drilling
- The resource estimate is restricted to directly beneath the Olaroz salar surface, except for the area at the south, where influence from expansion hole E26 extends the resource beneath gravels to the west of the salar and towards the Cauchari resource
- The Olaroz basin has significant exploration potential with extensive areas to the north of the salar surface currently untested by drilling and also extensions towards the Cauchari Resource and to the west of the salar
- The increased Olaroz resource, together with the Cauchari Resource, support expansion from Stage 1 and 2 lithium carbonate production capacity (combined 42,500 tpa) and will form the basis for the Olaroz Stage 3/Cauchari expansion studies.

Allkem Managing Director and CEO, Martin Perez de Solay said, “*This significant increase in the resource, and the upgraded resource classification, confirms the world class status of Olaroz.*

“The combined 27 Mt resource across Olaroz and Cauchari supports future material expansion of production and will form the basis for the Olaroz Stage 3/Cauchari expansion studies currently underway. Further exploration will be required to fully test the significant potential of the Olaroz/Cauchari basin.”

“*Olaroz is complemented by the company’s high-quality Sal de Vida and James Bay Projects in Argentina and Canada. These projects will produce lithium chemicals for use in the EV supply chain in areas of low or no water stress, while contributing to the local economy and communities,” Mr Perez de Solay said.*

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2023 OLAROZ RESOURCE UPGRADE

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 owned by the Sales de Jujuy joint venture ("**SdJ JV**") comprising 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, including the recently acquired Maria Victoria property. These other properties have been subject to limited exploration and currently have small resources defined.

Table 1: Lithium Resource Estimate – March 2023

Interval (metres)	Volume Sediment (m^3)	Specific Yield Porosity	Volume Brine (m^3)	Brine litres	Li (mg/l)	Grams lithium	Tonnes Li	Tonnes LCE
Measured Resources 0-650 m								
0-200 overall & 0-650 (in Eas	33,316,374,710	6.46%	2,152,306,738	2.15231E+12	**657**	1,415,030,943,660	1,420,000	**7,550,000**
Indicated Resources 200-650 m								
200-650 and 0-350 (North & S	35,645,703,500	6.16%	2,196,423,559	2.19642E+12	**612**	1,343,926,286,543	1,340,000	**7,130,000**
Measured and Indicated Resources (M&I) 0-650 m								
0-650 combined	68,962,078,210	6.31%	4,348,730,296	4.34873E+12	634	2,758,957,230,203	2,760,000	**14,680,000**
Inferred Resources 350 ->650 m								
350-650 (North & South)	17,043,607,000	5.93%	1,010,534,106	1,010,534,106,087	**578**	583,845,127,927	585,000	**3,100,000**
>650 in north	20,681,459,500	4.13%	853,671,348	853,671,348,140	**636**	542,579,541,967	540,000	**2,870,000**
Total	106,687,144,710	**5.82%**	6,212,935,750	6,212,935,750,484	**625**	3,885,381,900,097	3,885,000	**20,650,000**

Table 2: March 2023 Lithium Resource Estimate by Owner

Interval (metres)	Volume Sediment (m^3)	Specific Yield Porosity	Volume Brine (m^3)	Brine litres	Li (mg/l)	Grams lithium	Tonnes Li	Tonnes LCE
Measured Resources 0-200 & 200-650 m								
SdJ JV 0-200	20,426,347,200	6.80%	1,388,194,982	1.38819E+12	648	899,019,213,869	899,019	4,780,000
SdJ JV 200-650	7,169,550,000	4.66%	334,108,200	3.34108E+11	736	245,930,338,801	245,930	1,310,000
AKE (Olaroz Lithium) 0-200	1,913,329,210	7.76%	148,395,900	1.48396E+11	660	98,004,344,284	98,004	520,000
AKE (Olaroz Lithium) 200-650	226,600,000	4.12%	9,346,344	9346343600	743	6,945,410,227	6,945	37,000
AKE (Maria Victoria) 0-200	3,580,548,300	7.60%	272,261,312	2.72261E+11	607	165,131,636,479	165,132	880,000
Indicated Resources 200-650 m								
SdJ JV 200-650	22,787,486,500	6.05%	1,378,597,358	1.3786E+12	631	870,381,289,813	870,381	4,630,000
AKE (Olaroz Lithium) 200-650	1,099,626,000	4.34%	47,674,285	47674285230	769	36,679,601,762	36,680	195,000
AKE (Maria Victoria) 200-650	1,309,000,000	4.84%	63,373,926	63,373,926,000	618	39,185,599,267	39,186	210,000
Indicated Resources 200-350 m								
SdJ JV 200-350	7,421,230,000	7.56%	560,926,248	5.60926E+11	556	311,756,331,240	311,756	1,660,000
AKE (Olaroz Lithium) 200-350	925,057,000	4.50%	41,641,441	41641440855	622	25,899,529,880	25,900	130,000
AKE (Maria Victoria) 200-350	2,103,304,000	4.95%	104,210,300	104,210,299,984	576	60,023,934,581	60,024	320,000
Inferred Resources 350-650 m								
SdJ JV 350-650	10,554,262,000	7.23%	763,453,096	7.63453E+11	572	436,758,271,856	436,758	2,320,000
AKE (Olaroz Lithium) 350-650	1,982,265,000	3.05%	60,528,462	60528461775	627	37,971,590,972	37,972	200,000
AKE (Maria Victoria) 350-650	4,507,080,000	4.14%	186,552,548	186,552,548,280	585	109,115,265,100	109,115	580,000
Inferred Resources >650 m								
SdJ JV >650	11,785,936,000	4.07%	479,687,595	4.79688E+11	650	311,719,613,638	311,720	1,660,000
AKE (Olaroz Lithium) >650	3,681,647,500	3.40%	125,297,509	1.25298E+11	671	84,123,161,398	84,123	448,000
AKE (Maria Victoria) >650	5,213,876,000	4.77%	248,686,244	2.48686E+11	590	146,736,766,931	146,737	780,000
Total	**101,473,268,710**	5.88%	**5,964,249,507**	**5,964,249,506,912**	**627**	**3,738,645,133,166**	**3,738,645**	**20,660,000**

- Allkem SdJ is owned 66.5% by the Allkem group. Olaroz Lithium and Maria Victoria are owned 100% by the Allkem group.
- 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.
- Lithium is converted to lithium carbonate (Li_2CO_3 = LCE) with a conversion factor of 5.32.

- The upper 100 m of sediments in the gravel area off the salar west of E26 is excluded from the resource, as lithium concentrations to this depth are <100 mg/l Li, before rapidly increasing in concentration below this depth.
- The resource estimate is limited at depth by the sediment-basement contact interpreted from the gravity geophysical survey conducted over the basin. Drilling suggests this interpretation underestimates the basin depth.

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 km^2 from surface to a maximum depth of 200 metres (the **2011 Resource**).

Following installation of the 200m depth Stage 1 production wellfields at Olaroz several deeper wells were installed up to 350m 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 (l/s) and this highlighted 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.

As previously stated, Allkem's Cauchari properties, (100% owned through South American Salars), 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 interpreted to occupy the southern continuation of the same aquifers present in the Olaroz salar, which are connected beneath gravel alluvium (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.

Table 3: Cauchari April 2019 Resource Estimate

	Measured		Indicated		M+I		Inferred	
Aquifer volume (km^3)	10		21		31		11	
Mean specific yield (Sy)	0.066		0.059		0.061		0.056	
Brine volume (km^3)	0.6		1.2		1.9		0.6	
Element	Li	K	Li	K	Li	K	Li	K
Mean grade (g/m^3)	35	291	26	238	29	255	27	225
Mean concentration (mg/L)	527	4438	452	4145	476	4238	473	3867
Resource Kt	345	2800	550	5000	900	7800	290	2400
Resource LCE Kt	**1,850**		**2,950**		**4,800**		**1,500**	

- 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, 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.

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Stage 2 work program

Much of the technical detail in this release was previously provided in April 2022 in the Interim Resource Estimate. The last of the 15 wells for Stage 2 production (Figure 3) was completed late in 2022. These production wells are now installed to depths between 450 m and 650 m (with one hole, E15, to 751 m) and produce brine from these deeper levels on a 1 km north-south spacing in the central to eastern area of the salar, between the original Northern and Southern wellfields. In addition to the production wells a number of diamond drill holes provided core and brine samples and have allowed the installation of monitoring wells. The Stage 2 production wells are currently producing a combined flow of approximately 396 l/s, at an average per well of 28 l/s, since beginning operation. This is considerably higher than the Stage 1 wells, which have averaged 11 l/s per well since the beginning of 2017.

Samples from the wells were sent to external and internal laboratories for chemical analysis. This information and downhole geophysics (from a borehole magnetic resonance tool, part of a broader suite of geophysical tools) were used to update the geological model, which supports the resource estimate upgrade.

The lithium concentrations from the Stage 2 wells have recorded an average lithium grade of 643 mg/l and varied from 544 mg/l to 789 mg/l lithium. Further drilling information and analytical results are displayed in Appendix A below.

Property position

Allkem holds an extensive property position across the Olaroz and Cauchari basins (Figure 1). At Olaroz, Allkem owns 66.5% of properties via Sales de Jujuy SA , a joint venture company with Toyota Tsusho Corporation (25%) and JEMSE (8.5%).

Properties held by SDJ in the 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.

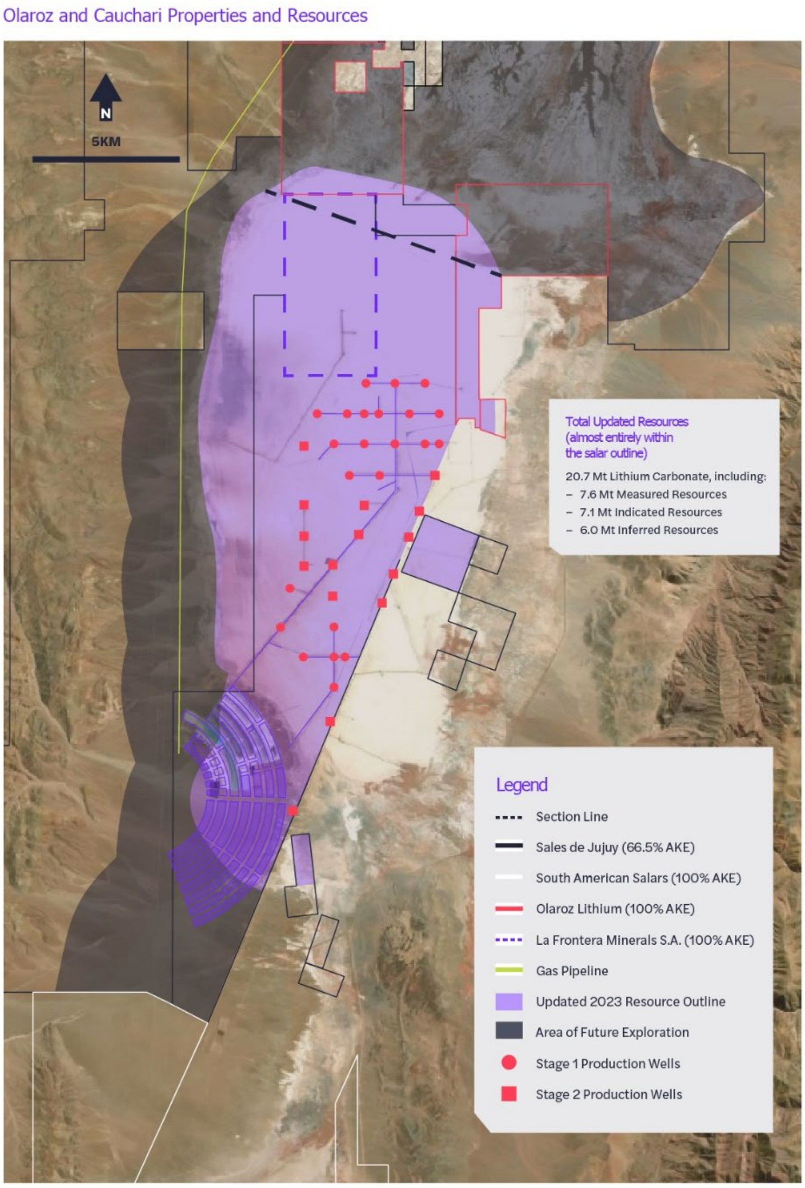
In addition to its ownership interests via SDJ, Allkem also owns, via Olaroz Lithium, 100% of five additional properties in the north of the Olaroz salar, which have also not yet been drilled. The recently acquired, strategically located, Maria Victoria property in the north of the Olaroz salar is 100% owned through Allkem subsidiary La Frontera Minerals S.A and contributed 2.7 Mt LCE to this resource upgrade.

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 South American Salars (now 100% Allkem) with resources and reserves.

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. This is important in order to constrain the geological and hydrogeological models and assess areas for brine prospectivity off the salar. The northern SDJ and 100% Allkem properties have been subject to minimal exploration to date. However, electrical geophysics indicates prospectivity for brine beneath alluvial and deltaic sediments north of the Olaroz salar in the Cateo 498 and other properties. This has also recently been confirmed by drilling by a third party with properties extending off the salar in the north of the basin.

Figure 1: Distribution of the new holes for Stage 2 production



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.

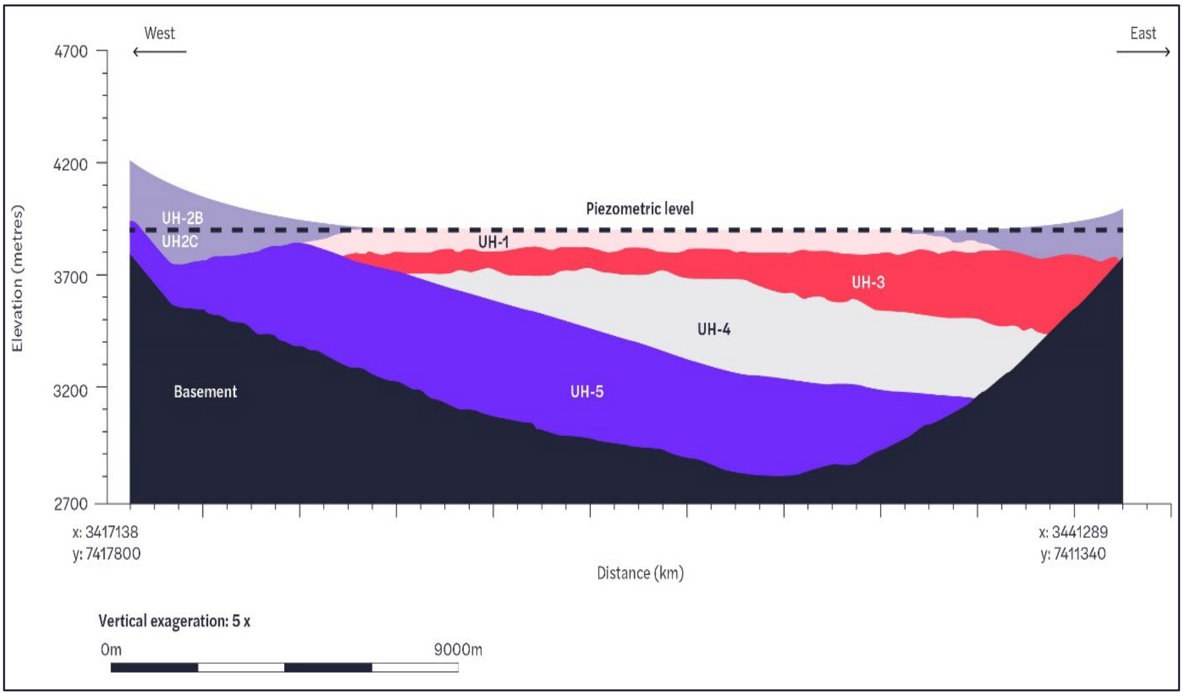
Since the exploration drilling for the 2011 Resource estimation, conducted between 2008 to 2011, more extensive drilling undertaken for exploration and production well installation has provided information to depths of 751 m in Olaroz (generally 400 to 650 m) and better defined the basin geology. Additionally, one deep exploration hole has been drilled at the north end of the production area to a depth of over 1400 m, without intersecting basement rocks. 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 2 and 3) as previously presented.

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 off the salar (as defined by production well E26)
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

Drilling has not intersected the basement rocks beneath the salar and it is possible that additional units will be intersected in future deeper drilling. In the central eastern part of the salar unit UH4 is thicker, reflecting the nucleus of the salar in this area.

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

Figure 2: Geological model of the Olaroz salar



Hydrogeology sampling background

Allkem began exploration of the Olaroz project in 2008 and has built up extensive knowledge of the salar since that time. Resource definition drilling on the project included twenty sonic holes drilled to a depth of 54 m across the salar, with 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 (PD02) was subsequently incorporated into the southern wellfield for Stage 1 production. Pumping since 2013 has confirmed the original pumping test results from this site.

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 later holes 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.

Stage 1 production wells and exploration holes showed 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. However, recent deeper production wells (from 450 to 650 m deep) for Stage 2 have encountered higher grade brine in some holes in the west of the salar (E12, E17 and E19 averaging 768, 692 and 752 mg/l respectively – see Figures 3) than the shallower 200m exploration drilling 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, with lower relative contributions from compact halite material. 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.

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 pre-development projects. However, further diamond drilling is recommended in new areas and areas of the salar before the installation of production wells.

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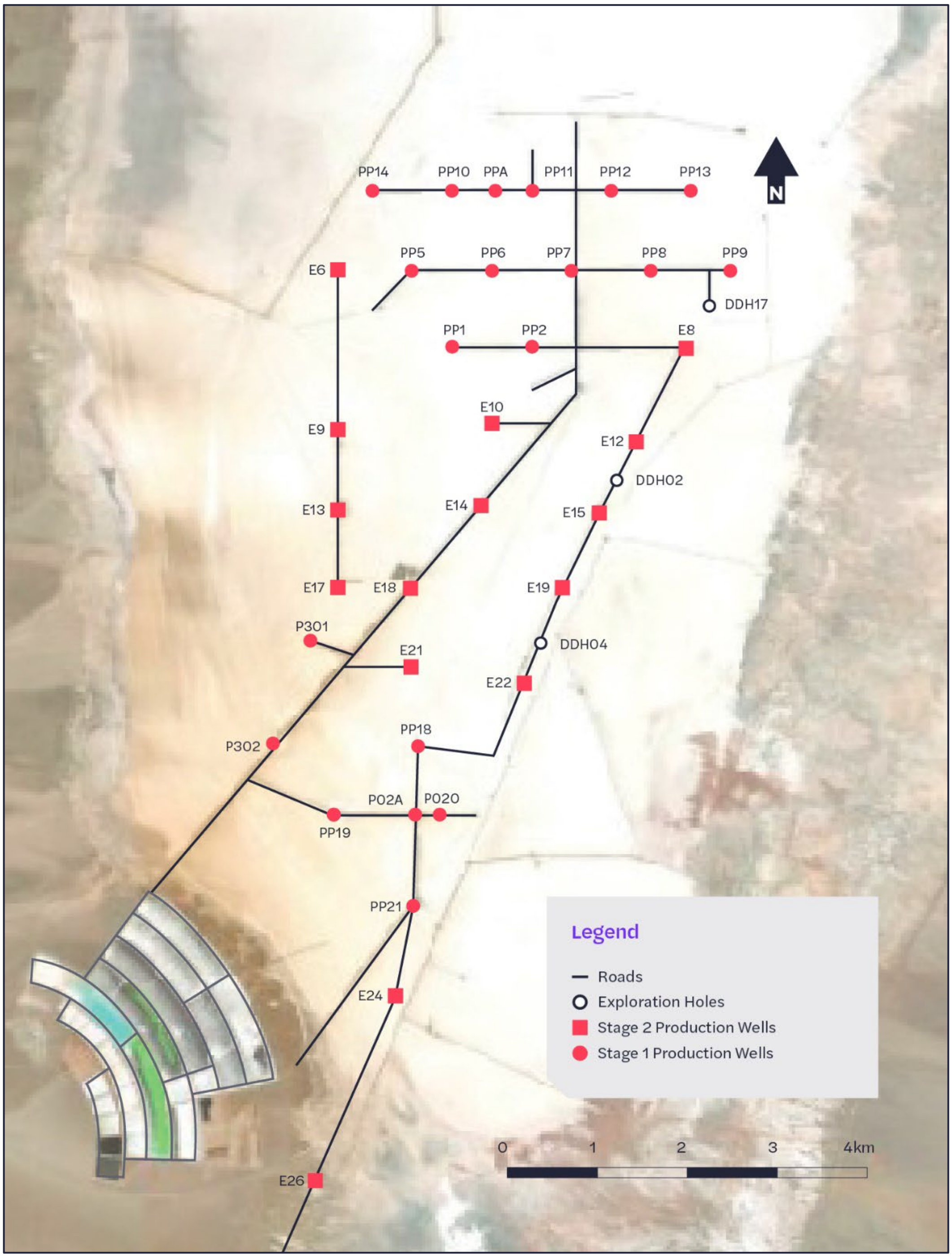
Figure 3 – Olaroz well locations



Brine sample quality control

Brine samples have been collected from the wells in production once they are fully installed. This follows flow tests, 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 standard samples and field duplicate samples were included with the sample batches. These QA/QC measures were included to check the performance of the Olaroz and external 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 were completed for the expansion program. Cores were collected systematically through these holes with samples collected in transparent polycarbonate (Lexan) 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 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 can be 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 upgraded 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.

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 recommended for future resource evaluations and to allow installation of additional deep monitoring wells.

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.

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Mineral Resources

Estimation of a brine resource requires definition of:

- The aquifer distribution (in this case restricted to the salar outline, except around hole E26 in the south)
- The distribution of drainable porosity (specific yield) values
- The distribution of lithium and other 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 lithium 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 (except for the off-salar extension around E26). The 2023 resource covers 147.9 km^2, larger than the original 2011 Resource area (93 km^2).

The expanded area reflects inclusion of the Olaroz Lithium and Maria Victoria properties, which were not part of the original property holdings, and the area around E26. The resource has been further expanded by the drilling of hole E26, allowing definition of resources beneath the alluvial gravels south of the salar (Figure 3). Brine saturated sediments are known to extend beneath alluvial sediments surrounding the salar and this was confirmed in drilling of hole E26 on the edge of the gravels beside the salar, which continued to 510 m in sandy and gravel material.

The resource estimate is limited laterally by the boundaries (Figure 3) with adjacent property owner Exar, in the salar to the east and north of the properties owned by Allkem and SDJ entities. The resource estimate is limited at depth by the sediment-basement contact interpreted from the gravity geophysical survey conducted over the basin. Drilling suggests this interpretation underestimates the basin depth.

Within the salar the three-dimensional distribution of the different hydrostratigraphic units was defined using Leapfrog 3D software, with these units based on geological and geophysical logging observations. The resource is entirely within the salar, except in the gravel area extending west from production hole E26. This is the only location where brackish water overlies brine within the resource estimate. The upper 100 m of this area off the salar has been excluded from the resource estimate, because it is not brine. Conversion of the resource to reserve in this area will evaluate extraction of this brine for future production. In all other areas within the resource brine begins from the salar surface.

The porosity data set consisted of interval porosity samples analysed in an independent laboratory for the upper 200 m and the BMR downhole geophysics from 200 to > 650 m. These were 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, assigned to the areas with screens in the production wells.

The block model was constructed with 500 by 500 m blocks, with a 20 m vertical extent (Figure 4 and Figure 5). Only the portion of the block inside the salar outline is reported in the resource (with the exception of the area around E26). 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. In areas of sparse data around the model edges Nearest Neighbour estimation was used.

The resource was estimated using four passes in 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 extension around E26, defined over different depths, reflecting drilling density and confidence. Future drilling on the salar may bring additional resources into the Indicated and Measured classification.

Figure 4: Lithium grades (mg/L) at 100 m (left) and 250 m below surface (right)

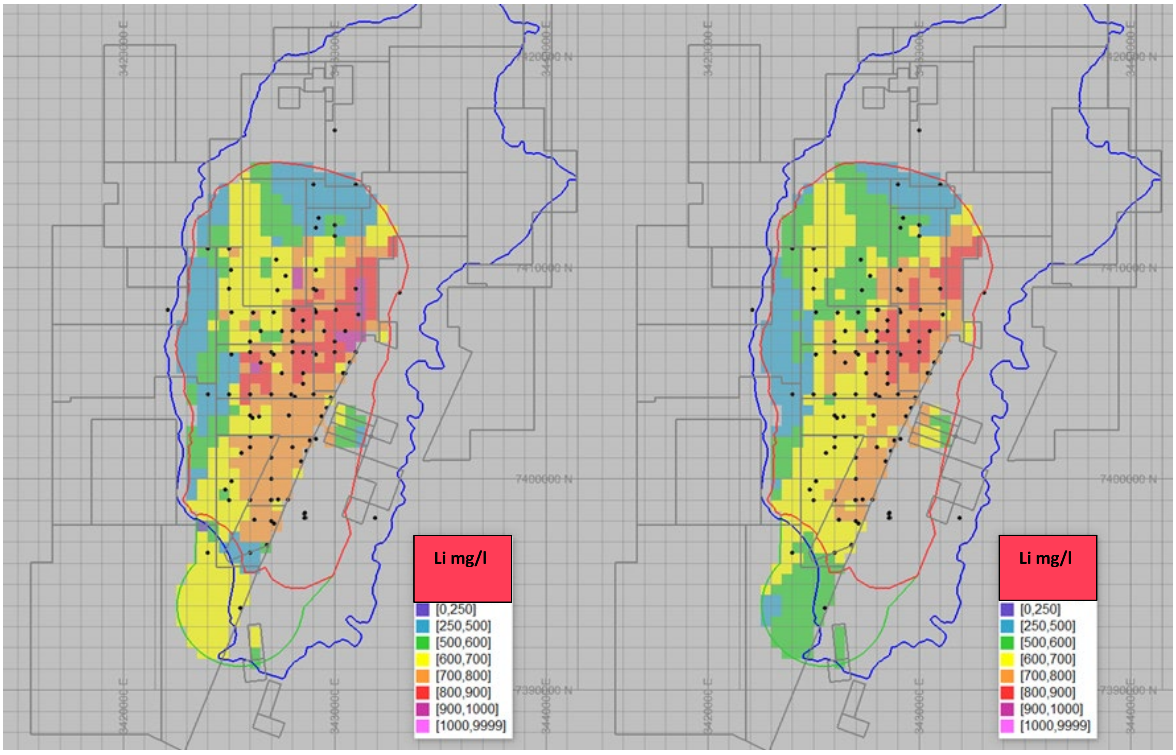
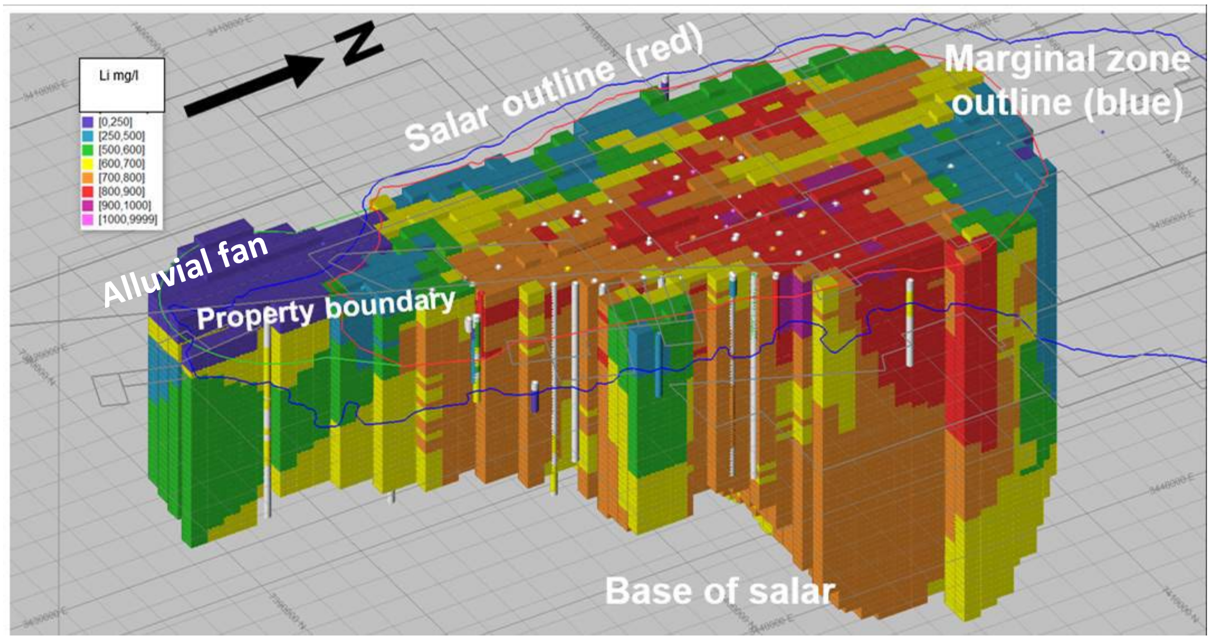


Figure 5: Resource blocks in lithium mg/l, showing the salar edge (red), alluvial zone (green) in the south and the muddy marginal zone outline (between red and blue outlines)



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 of over eight years. Wells have a drilling density of approximately 1 per 2 km^2 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.

An additional area of Measured Resources has been defined around the three diamond drill holes on the easter margin of the project, south of the deep hole E1. An extension of 2.5 km from the property boundary has been applied for definition of this Measured Resource, consistent with the suggestion of Houston et. al., 2011. This is considered a reasonable basis for extension of the resource to 650 m depth in this area, surrounded by Indicated Resources.

The Measured resource 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, geophysical logging of holes, and gradual changes in lithium concentration provide the basis for classifying the brine between 200 and 350 m below surface in the north of the salar (with lesser drilling density) and south off the salar around hole E26 as Indicated to this depth. In the more central part of the salar the resource is defined as an Indicated resource (with greater drilling density) between 200 and 650 m depth.

Laboratory porosity samples are relatively limited below 200 m, however similar sediment intervals are present above 200 m at Olaroz, where porosity characteristics have been established from hundreds of laboratory analyses. Extensive porosity samples from similar sediments are also available from the Allkem Cauchari properties. Ongoing extraction by pumping of brine from wells up to 450 m deep since 2014 and from 650 m depth for up to 3 years, provides confidence as to the extractability of brine from the resource to this depth.

BMR porosity data was collected below 200 m depth, providing extensive porosity data in the Stage 2 holes. Future drilling below 200 m provides the opportunity to upgrade Indicated Resources to Measured status.

Inferred Mineral Resources

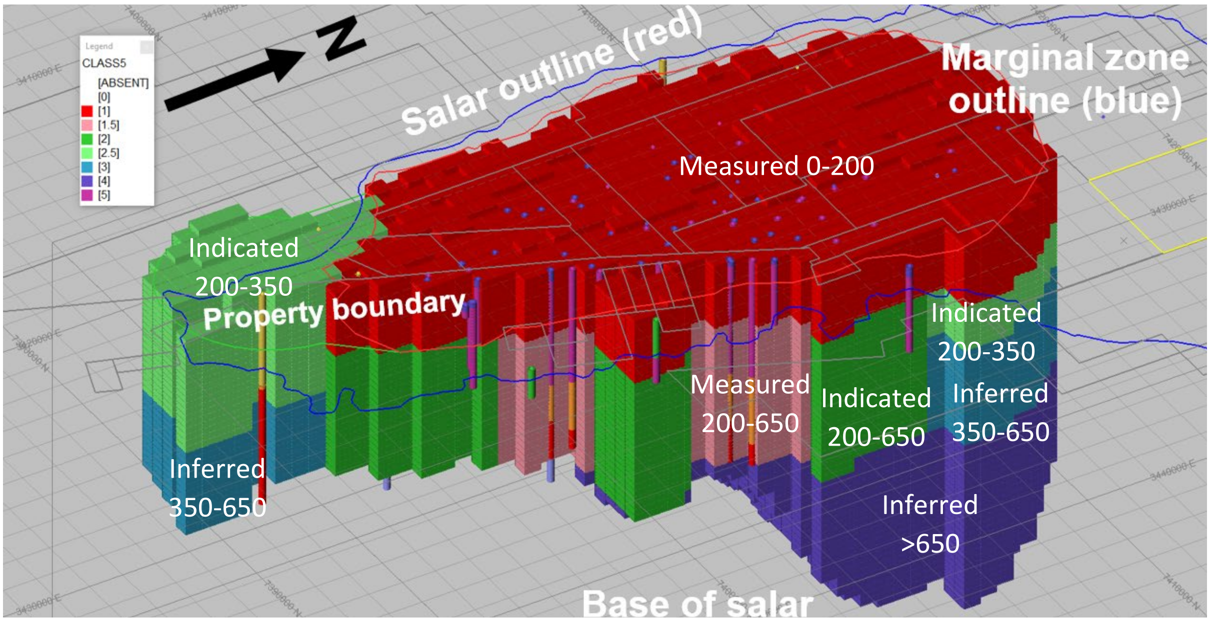
An 'Inferred Mineral Resource' is that part of a Mineral Resource for which quantity and grade (or quality) are estimated on the basis of limited geological evidence and sampling. Geological evidence is sufficient to imply but not verify geological and grade (or quality) continuity. It is based on exploration, 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 between 350 m and 650 m off the salar to the north and south. Within the salar Inferred resources are defined below 650 m and the base of the basin. The base of the basin is defined by the gravity geophysical survey, with areas significantly deeper than 650 m defined. There are currently 19 production wells installed to 350 m or below, with production wells for the Olaroz Expansion Project installed between 400 and 751 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, where the geophysical estimated basement depth has been reached, suggesting the basin may be deeper than estimated from the gravity survey. Brine samples were completed in this deep hole.

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.

Figure 6: Distribution of resource categories



Further exploration potential

The resource is open laterally over an extensive area to the north off the salar, and to the south and west, beneath sands and gravels that surround the salar.

To the south, previous limited drilling and geophysical surveys indicate the brine body is likely to extend south to link with the Cauchari Resource (Allkem 100%). Similarly, brine extends west of the salar. The greatest potential, based on work by Allkem and 3rd parties, is over the extensive area to the north under the Rio Rosario delta, where future drilling is required to define resources. The resource may also extend at depth beyond the base of the basin interpreted by gravity geophysics. To date no Allkem drilling in the Olaroz basin has yet intersected the basement, allowing for significant future additions to the company's resource base. Consequently, there is substantial potential to add additional resources in the project.

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 www.asx.com.au.

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 "NI43-101 Technical Report Cauchari JV Project — Updated Mineral Resource Estimate" which is available to view on www.allkem.co and www.asx.com.au. 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 March 2023" (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 is 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 AND LITHIUM CONCENTRATION

Well	Easting GK3Posgar94	Northing GK3Posgar94	Azimuth& Dip	Well Depth m	Lithium Concentration (mg/L) *
E6	3426000	7406000	360/-90	630	657
E8	3430393	7405013	360/-90	640	789
E9	3425998	7403999	360/-90	452	590
E10	3427942	7403996	360/-90	467	749
E12	3429810	7403841	360/-90	651	775
E13	3426000	7403000	360/-90	450	618
E14	3427830	7403005	360/-90	651	574
E15	3429374	7402970	360/-90	751	
E17	3426003	7401998	360/-90	450	686
E18	3427000	7402000	360/-90	451	680
E19	3428819	7401821	360/-90	653	732
E21	3427000	7401000	360/-90	456	694
E22	3428413	7400830	360/-90	671	667
E24	3426794	7396871	360/-90	654	544
E26	3425534	7393885	360/-90	510	638
PP1	3427500	7405000	360/-90	350	696
PP2	3428500	7405000	360/-90	199	776
PP5	3427000	7406000	360/-90	200	594
PP6	3428000	7406000	360/-90	199	758
PP7	3429000	7406000	360/-90	348	781
PP8	3430000	7406000	360/-90	195	936
PP9	3431000	7406000	360/-90	199	878
PP10	3427500	7407000	360/-90	210	549
PP11	3428500	7407000	360/-90	205	635
PP12	3429500	7407000	360/-90	198	730
PP13	3430500	7407000	360/-90	197	981
PP14	3426500	7407000	360/-90	197	551
PP15	3428060	7407999	360/-90	198	542
PP16	3429060	7407999	360/-90	198	718
PP17	3430060	7407999	360/-90	199	803
PP18	3427000	7400000	360/-90	197	830
PP19	3426000	7399000	360/-90	198	746
PP21	3427000	7398000	360/-90	465	749
PPA	3428042	7406988	360/-90	195	850
PD02A	3427009	7399007	360/-90	450	655
P301	3425585	7401225	360/-90	290	728
P302	3424826	7399489	360/-90	310	632

*Average well flows from 12 January 2017 to 31 January 2023

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 (in one hole 751 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 representivity of samples.*	• 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 production pumping or pumping tests of new wells, once

Allkem

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 • Check samples were analysed in the Alex Stuart independent commercial laboratory in Jujuy, Argentina. • 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. • Brine samples from production wells were analysed in the Olaroz site laboratory, with QA/QC samples analysed in the Alex Start independent laboratory in Jujuy, Argentina
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, South American Salars 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 close to surface and semi-confined to confined 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*	• The holes are located in the mining properties covering the Olaroz salt lake, centred around approximately 7402000N/ 3427000E and approximately 3930 m elevation, in Zone 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
	clearly explain why this is the 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.*	• Diagrams are provided in the text showing the location of the properties, the drill holes and cross section 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*	• 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
	practiced to avoid misleading 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 has conducting rotary drilling to obtain geological information, brine samples, and hydraulic parameters for the installation of additional production wells. Future drilling will also support an update of the resource estimation. Future updates to the resource will be released when drilling is conducted peripheral to the salar in areas when little or no current drilling.
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 has recently completed installing 15 deep production wells for Stage 2 of the project. Future drilling 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 future drilling 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.*	• Data was transferred directly from laboratory spreadsheets to the database. • Data was checked for transcription errors once in the database, to ensure coordinates, assay values and lithological codes were correct • Data was plotted to check the spatial location and relationship to adjoining sample points • Duplicates and Standards have been used in the assay process. • Brine assays and porosity test work have been analysed and compared with other publicly available information for reasonableness. • Comparisons of original and current datasets were made to ensure no lack of integrity.

Criteria	JORC Code explanation	Commentary
Site visits	• *Comment on any site visits undertaken by the Competent Person and the outcome of those visits.* • *If no site visits have been undertaken indicate why this is the case.*	• The Competent Persons visited the site many times prior to the current drilling and sampling program and more recently Mr Brooker visited the site in November 2022. • 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, supplemented by BMR geophysical data in production wells. Brine data below 200 m, consists 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, except in the SE around E26, and in the east and north the boundary with adjacent properties. On the salar (and in the southern extension below alluvial gravels) the brine mineralisation covers 147.9 km^2. • 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

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		geophysics, based on drilling to date. The basement rocks underlying the salt lake sediments have not yet been intersected in drilling.
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*	• 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 and will be refined as new information becomes available. 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 were estimated independently. • The geological interpretation was used to define each geological unit and the salar boundary and property limit were used to enclose the reported resources. The lithium and potassium concentrations are not necessarily related to a particular lithology. • The Inferred resource was estimated on the basis that it is within the salt lake or immediately adjacent and

Criteria	JORC Code explanation	Commentary
	capping. • *The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.*	occupies the same or similar geological units to the Indicated and Measured resource, although drilling in the Inferred resource area is more limited around the margins of the salar. • Validation was performed 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 and the alluvial gravels that surround the salar.
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

Criteria	JORC Code explanation	Commentary
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 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.*	• 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 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 Stage 1 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*	• 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

Criteria	JORC Code explanation	Commentary
	and representativeness of the samples. • *The bulk density for bulk material must have been measured by methods that adequately account for void 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.*	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 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 in the deeper part of the salar and around the edges of the salar, 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*	• 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
	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, 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.*	