

## ASX ANNOUNCEMENT | ASX : LTR

29th November 2021

# Liontown bulk concentrate program successfully produces premium +6% lithium and tantalum concentrate samples

Outstanding results reinforce Tier-1 nature of Kathleen Valley Project with samples to facilitate ongoing off-take negotiations and future lithium hydroxide testwork program

## HIGHLIGHTS

- Bulk sample testwork successfully completed on diamond core collected from Kathleen Valley (KV) to produce a large volume of representative +6% Li<sub>2</sub>O concentrate (SC6.0), and a quantity of tantalum concentrate as part of advanced off-take discussions.
- Following the Definitive Feasibility Study (DFS), *ALS* has completed a large-scale concentrate program in line with the DFS flowsheet, including crushing, magnetic separation and flotation, with oversight from engineering consultant Lycopodium.
- Clean +6% Li<sub>2</sub>O concentrate produced as part of the bulk sample work will be used to support both current off-take negotiations and the planned lithium hydroxide Downstream Pre-Feasibility Study (DPFS).

**Liontown Resources Limited** (ASX: LTR; "Liontown" or "Company") is pleased to announce the successful completion of a large-scale spodumene concentrate production program using a bulk sample collected from its 100%-owned Kathleen Valley ("KV") Project in Western Australia's Northeastern Goldfields.

The pilot scale testwork program successfully produced premium +6% spodumene ( $Li_2O$ ) concentrate and tantalum concentrate, supporting off-take discussions and further supporting the potential to develop a leading second-generation lithium-tantalum mining and processing operation at Kathleen Valley.



Figure 1 – Typical 6% Spodumene Concentrate from Kathleen Valley.

Liontown Resources Limited | ABN 39 118 153 825 Level 2, 1292 Hay Street, West Perth WA 6005, Australia | PO Box 284, West Perth WA 6872 **T:** +61 (0) 8 6186 4600 | E: info@ltresources.com.au | www.ltresources.com.au For the testwork program, the Company collected ~5 tonnes of representative mineralised pegmatite from the Company's core inventory at Kathleen Valley. Samples were selected to reflect variation in both depth and spatial distribution and composited in line with the mining zones identified as part of the recently published Definitive Feasibility Study (DFS).

The purpose of the bulk sample processing work was to produce representative high-grade +6%  $Li_2O$  KV concentrate and sufficient Tantalum  $Ta_2O_5$  concentrate to support current off-take negotiations and to provide feedstock for the planned Lithium Hydroxide hydrometallurgical testwork program. The downstream hydrometallurgical testwork is scheduled to commence in December as part of the Company's Downstream Pre-Feasibility Study (DPFS).

The flowsheet adopted was based on the results of the extensive SC6.0 DFS metallurgical testwork program. The testwork batch flowsheet included:

- Crushing;
- Milling;
- Magnetic Separation & Tabling to produce a Tantalum Concentrate;
- Deslime and Conditioning of the Flotation Feed;
- Whole of ore Flotation; and
- Vacuum Filtration of Li<sub>2</sub>O Concentrate.

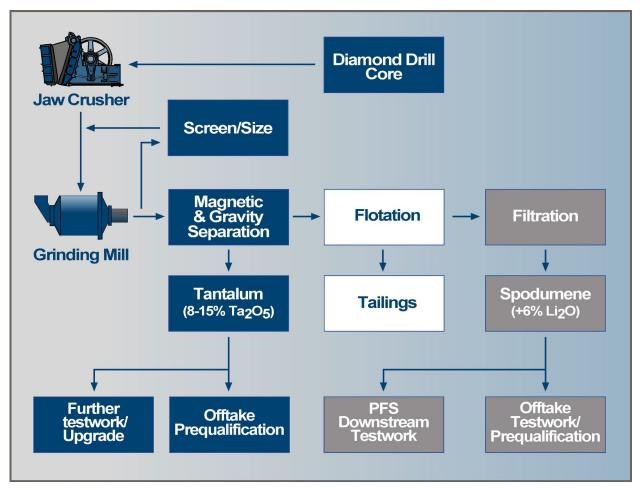


Figure 2 – Outlines the basic block flow diagram of the batch bulk sample programme.

The successful completion of the large-scale test work program marks a crucial step in advancing the Kathleen Valley Project towards development. Representative diamond core was processed at ALS using their modular block/s of suitably scaled equipment, as shown in the images below:





Deslime & Conditioning





**Final Concentrate** 



Tony Ottaviano and David Richards with +6% concentrate

Tony Ottaviano, Liontown's Managing Director and Chief Executive Officer, commented:

"The bulk sample testwork program is a key component of our thorough and exhaustive metallurgical testwork program for Kathleen Valley which continues to demonstrate Liontown's commitment to evidence-based design. Our partners, ALS and Lycopodium, have provided a world-class laboratory and expertise throughout the more than three years of testwork and the successful production of premium +6% lithium concentrate validates our methodical approach.

"The final product from the program will enable Liontown's potential customers to test and pre-qualify our high-quality spodumene for operating in their refinery or toll-treaters. The product will also be used to support future detailed design engineering of our both our tantalum circuit and downstream lithium hydroxide refinery."

This announcement has been authorised for release by the Managing Director.

Altaviais

Tony Ottaviano CEO and Managing Director

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#### **Competent person statements**

The Information in this report that relates to Exploration Results and Mineral Resources for the Kathleen Valley Project is extracted from the ASX announcement "Strong progress with Kathleen Valley Definitive Feasibility Study as ongoing work identifies further key project enhancements" released on the 8th April 2021 which is available on www.ltresources.com.au. The Company confirms that it is not aware of any new information or data that materially affects the information included in the previous market announcement and that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed.

The information in this report that relates to metallurgical test work and process design for the Kathleen Valley Project is based on, and fairly represents, information compiled by Mr Aidan Ryan who is a Fellow of the Australasian Institute of Mining and Metallurgy. Mr Ryan is an employee of Lycopodium Minerals Pty Ltd and has sufficient experience relevant to the style of processing response and type of deposit under consideration, and to the activities undertaken, to qualify as a Competent Person as defined in the 2012 edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mr Ryan consents to the inclusion in the report of a summary based upon his information in the form and context in which it appears.

#### **Forward-looking statements**

This report contains forward-looking statements which are identified by words such as 'may', 'could', 'believes', 'estimates', 'targets', 'expects', or 'intends' and other similar words that involve risks and uncertainties. These statements are based on an assessment of present economic and operating conditions, and on a number of assumptions regarding future events and actions that, as at the date of this report, are considered reasonable. Such forward-looking statements are not a guarantee of future performance and involve known and unknown risks, uncertainties, assumptions and other important factors, many of which are beyond the control of the Company, the Directors and the management. The Directors cannot and do not give any assurance that the results, performance or achievements expressed or implied by the forward-looking statements contained in this report will actually occur and investors are cautioned not to place undue reliance on these forward-looking statements. The Directors have no intention to update or revise forward-looking statements, or to publish prospective financial information in the future, regardless of whether new information, future events or any other factors affect the information contained in this report, except where required by law or the ASX listing rules.

### Appendix 1 – Kathleen Valley – JORC Code 2012 Table 1 Criteria

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.	<ul> <li>Following the DFS metallurgical program, a bulk concentrate proprogram has been carried out at ALS laboratories in Perth in through to November 2021 with process input from Lycopodium. As reported in the 11<sup>th</sup> November 2021 DFS ASX release titled "Valley DFS confirms Tier-1 global lithium project with out economics and sector-leading sustainability credentials" three ore zones were identified at Kathleen valley ie</li> <li>Two underground mining zones :-</li> <li>The Mount Mann Vertical, which comprises a 5-40 orebody dipping at 50° to 60° to the south-west; and</li> <li>The North West Flats, which comprises multiple pegmatite lodes that range from 4-30m thick.</li> <li>One open pit zone that comprises two small open pits.</li> </ul>				
	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	Metallurgical tes from diamond metallurgical dri Samples were of additional open distribution in-li addition, a 'cor processed ie fo Samples include Commissioning OVERALL:- Mass	aterials source oploration an ourced ore an opth and spatia hted above. I rade' was als			
	warrant disclosure of detailed information.					
		Open Pit compo	site			
		OVERALL:- Mass	247 drill core INTERVALS <u>1445 kg</u> Average Wt average Max Min Stdev	<b>Ta₂O₅</b> (ppm) 205 199 702 40 103	Li <sub>2</sub> O (%) 1.55 1.63 3.93 0.39 0.70	
		North West com OVERALL:- Mass	401 drill core INTERVALS 1381 kg Average Wt average Max Min	<b>Ta₂O₅</b> (ppm) 201 203 668 6	Li <sub>2</sub> O (%) 1.85 1.89 3.94 1	

Criteria	JORC Code explanation		Commentary			
		Mount Mann Composition				
		OVERALL:-	485 drill core INTERVALS	Ta₂O₅	Li <sub>2</sub> O	
		Mass	<u>1392 kg</u>	(ppm)	(%)	
			Average	111	1.443	
			Wt average	111	1.534	
			Max	688	6.764	
			Min	1	0.008	
			Stdev	65	1.090	
Drilling	Drill type (eg core, reverse circulation, open-hole hammer,	<ul> <li>No drilling program re</li> </ul>	being reported – Metallurgic sults	al bulk sam	ple production	
techniques	rotary air blast, auger, Bangka,	programme	50115			
	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 so,					
Drill sample	by what method, etc). Method of recording and	No drilling	being reported – Metallurgic	al hulk sam	nle production	
recovery	assessing core and chip sample	program re		ui buik salli		
recovery	recoveries and results assessed.	1 0 0				
	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.					
Logging	Whether core and chip samples	No drill ass	ays being reported – Metallurg	vical bulk sa	mple	
20999	have been geologically and		program results			
	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.					
Sub-	If core, whether cut or sawn and	No drill assa	/s being reported – Metallurgi	cal bulk sam	ple production	
sampling	whether quarter, half or all core taken.	program res				
techniques	If non-core, whether riffled, tube					
and sample	sampled, rotary split, etc and					
preparation	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.					
	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.					

Criteria	JORC Code explanation	Commentary		
	Whether sample sizes are			
	appropriate to the grain size of			
	the material being sampled.			
Quality of	The nature, quality and appropriateness of the assaying	<ul> <li>No drill assays being reported – Metallurgical bulk sample</li> </ul>		
assay data	and laboratory procedures used	production program results		
and	and whether the technique is			
laboratory	considered partial or total.			
tests	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 (ie lack of bias) and			
	precision have been established.			
Verification	The verification of significant	• Senior technical personnel have visually inspected and verified the		
of sampling	intersections by either independent or alternative	metallurgical results.		
and	company personnel.			
assaying	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.			
Location of	Accuracy and quality of surveys used to locate drillholes (collar	• No drilling being reported – Metallurgical bulk sample production		
data points	and down-hole surveys), trenches,	program results		
	mine workings and other locations			
	used in Mineral Resource			
	estimation.			
	Specification of the grid system used.			
	Quality and adequacy of			
	topographic control.			
Data	Data spacing for reporting of	No drilling being reported – Metallurgical bulk sample production		
spacing	Exploration Results.	program results		
and	Whether the data spacing and distribution is sufficient to			
distribution	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.			
Orientation	Whether the orientation of	No drilling being reported – Metallurgical bulk sample production		
of data in	sampling achieves unbiased	program results		
relation to	sampling of possible structures and the extent to which this is			
geological	known, considering the deposit			
structure	type.			
	If the relationship between the	No drilling being reported – Metallurgical bulk sample production		
	drilling orientation and the orientation of key mineralised	program results		
	structures is considered to have			
	introduced a sampling bias, this			
	should be assessed and reported if			
	material.			

Criteria	JORC Code explanation	Commentary
Sample security	The measures taken to ensure sample security.	<ul> <li>Sample security is not considered to be a significant risk given the location of the deposit and bulk-nature of mineralization.</li> <li>Nevertheless, the use of recognized transport providers, sample dispatch procedures directly from the field to the laboratory, and the large number of samples are considered sufficient to ensure appropriate sample security.</li> <li>Company geologist supervises all sampling and subsequent storage in field through to ALS laboratories in Perth. The same field geologist arranges delivery of samples to ALS laboratories in Perth via courier or personally.</li> </ul>
Audits or reviews	The results of any audits or reviews of sampling techniques and data.	<ul> <li>Core used for the metallurgical testwork was part of prior exploration drilling – no specific additional audits or reviews outside of that reported previously were undertaken of core selected for this work.</li> </ul>

### Section 2 Reporting of Exploration Results

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.	<ul> <li>The Kathleen Valley Project is located ~680 km NE of Perth and ~45 km NNW of Leinster in Western Australia. The Project comprises four granted mining leases - MLs 36/264, 36/265, 36/459, 36/460 and one Exploration License - E36/879.</li> <li>The mining leases (MLs) and rights to pegmatite hosted rare-metal mineralisation were acquired from Ramelius Resources Limited via a Sales Agreement completed in 2016. The MLs have been transferred to LRL (Aust) Pty Ltd, a wholly owned subsidiary of Liontown Resources Limited (Liontown).</li> <li>Ramelius acquired 100% of the Kathleen Valley Project MLs in June 2014 from Xstrata Nickel Operations Pty Ltd (Xstrata). Xstrata retains rights to any nickel discovered over the land package via an Offtake and Clawback Agreement.</li> <li>The Gold Rights were acquired from Ramelius via a Sales Agreement completed in June 2019.</li> <li>The lithium Royalty with Ramelius was cancelled via a Royalty Termination Deed completed in August 2021.</li> <li>LRL (Aust) Pty Ltd has assumed the following Agreement: <ul> <li>Bullion and Non-Bullion Royalty Agreement of a 2% Gross Production Royalty affecting M36/264-265 and 459-460.</li> </ul> </li> <li>The EL is in the name of Liontown Resources Limited with no third-party obligations apart from statutory and native title Agreement requirements.</li> <li>The tenements are covered by the Tjiwarl Determined Native Title Claim (WC11/7). Liontown has signed a number of agreements with the Tjiwarl which provide protocols to undertaking proposed field activities and recently signed a Native title agreement on the 17<sup>th</sup> November 2021</li> <li>LRL (Aust) Pty Ltd has also received Section 18 consent to drill on certain areas with M36/459, M36/460 and E36/879.</li> </ul>
	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.	All tenements are in good standing.
Exploration done by other parties	Acknowledgment and appraisal of exploration by other parties.	<ul> <li>Multiple phases of exploration have previously been completed for gold and nickel. This has not been reviewed in detail due to Liontown's focus on rare metal pegmatites.</li> <li>There has been limited sporadic prospecting for Li, Ta and Sn, principally by Jubilee Mines (subsequently taken over by Xstrata). Work comprised geological mapping, broad spaced soil sample lines and rock chip sampling of the pegmatites. Details of the methods and procedures used have not been documented.</li> <li>There has been no previous drill testing of the Li and Ta prospective pegmatites prior to Liontown acquiring the Project.</li> </ul>

Criteria	JORC Code explanation	Commentary					
Geology	Deposit type, geological setting and style of mineralisation.	<ul> <li>The Project is located on the western edge of the Norseman-Wiluna Belt within the Archaean Yilgarn Craton.</li> <li>The Kathleen Valley Project contains a series of quartz-feldspar- muscovite-spodumene pegmatites hosted in mafic rocks related to the Kathleen Valley Gabbro or the Mt Goode Basalts.</li> <li>The pegmatites are LCT type lithium bearing-pegmatites.</li> </ul>					
Drillhole Information	<ul> <li>A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drillholes:</li> <li>easting and northing of the drillhole collar</li> <li>elevation or RL (elevation above sea level in metres) of the drillhole collar</li> <li>dip and azimuth of the hole</li> <li>down hole length and interception depth</li> <li>hole length.</li> </ul>						
Data	In reporting Exploration Results,	Metallurgical te	stwork results reported herein	relate to ma	aterials sourced		
aggregation methods	weighting averaging techniques, maximum and/or minimum grade truncations (e.g. cutting of high	from diamond core drilled as part of previous expl					
	grades) and cut-off grades are usually Material and should be stated.	Samples were collected from potential underground-sourced ore a additional open pit samples reflecting variation in both depth and spa distribution in-line with the identified ore zones highlighted above. addition, a 'commissioning sample of representative grade' was a preocessed ie for commissioning the equipment assembled by A Samples included:-					
		Commissioning	· ·	To O	1:0		
		OVERALL:- Mass	573 drill core INTERVALS	Ta₂O₅	Li <sub>2</sub> O (%)		
		IVIASS	<u>1338 kg</u> Average	(ppm) 118	(%)		
			Wt average	113	1.415		
			Max	1273	4.972		
			Min	1	0.002		
			Stdev	99	11.321		
		Open Pit compo	osite				
		OVERALL:-	247 drill core INTERVALS	Ta₂O₅	Li₂O		
		Mass	<u>1445 kg</u>	(ppm)	(%)		
			Average	205	1.55		
			Wt average	199	1.63		
			Max	702	3.93		
			Min	40	0.39		
			Stdev	103	0.70		
		North West con	nposite				
		OVERALL:-	401 drill core INTERVALS	Ta₂O₅	Li₂O		
		Mass	<u>1381 kg</u>	(ppm)	(%)		
			Average	201	1.85		
			Wt average	203	1.89		
			Max	668	3.94		
			Min Stdev	6	1		
			STOOV	98	0.54		

Criteria	JORC Code explanation	Commentary					
		Mour	t Mann Co	mposition			
			RALL:-	485 drill core 1		Ta₂O₅	Li₂O
		Mas		1392 kg			(%)
		IVIAS	5			(ppm) 111	1.443
				Average			
				Wt average		111	1.534
				Max		688	6.764
				Min		1	0.008
				Stdev		65	1.090
Relationship	If the geometry of the mineralisation with respect to the		-	eing reported –	• Metallurgica	il bulk sam	ple production
between	drillhole angle is known, its	pr	ogram resu	iits			
mineralisation	nature should be reported.						
widths and	If it is not known and only the						
intercept	down hole lengths are reported, there should be a clear statement						
lengths	to this effect (e.g. 'down hole						
	length, true width not known').						
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 drillhole collar locations and appropriate sectional views.		o drilling b ogram resu	eing reported – Ilts	• Metallurgica	I bulk sam	ple production
Balanced	Where comprehensive reporting		Imooningf	ul and material d	lata has hoon	roportod	
reporting	of all Exploration Results is not	• ^	incanng			reporteu.	
reporting	practicable, representative						
	reporting of both low and high grades and/or widths should be						
	practiced to avoid misleading						
	reporting of Exploration Results.						
Other	Other exploration data, if	• W	here relev	ant, this inform	ation has bee	n included	or referred to
substantive	meaningful and material, should be reported including (but not	el	sewhere in	this Table.			
exploration	limited to): geological						
data	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.						
Further work	The nature and scale of planned	• De	etailed eng	neering and pro	ject early wo	ks associate	ed with
	further work (e.g. tests for lateral		-	ey development			
	extensions or depth extensions or large-scale step-out drilling).	• Pr	ovision of s	ample to poten	tial off-takers	ie marketin	ng samples
	iaige scale step out anning).			nstream LiOH te			
		• Ac	ditional ta	ntalum upgrade	testwork		