



**LRL (AUST) PTY LTD**

**CO-FUNDED DRILLING REPORT**

**KATHLEEN VALLEY LITHIUM**

For the Period

1 June 2022 to 31 May 2023

Kathleen Valley EIS Final Geological Report

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REPORT DATE:	30 November 2022
DISTRIBUTION:	

## Table of Content

Table of Content	1
Figures, Tables and Attachments	2
1. Bibliographic Data Sheet	3
2. Introduction	5
3. Location and Access Details	6
4. Tenement Details	7
5. Geology	8
5.1 Regional Geology	8
5.2 Local Geology	8
6. Previous Exploration	9
7. Current Exploration	10
8. Current Exploration Summary	11
8.1 Data Review	11
8.2 Drilling	11
8.3 Other	11
9. Conclusion and Recommendations	12
10. Appendices	13
11. Expenditure Summary	14

# Figures, Tables and Attachments

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## LIST OF APPENDICES

### Appendices as Attachment

<b>Attachment 1</b>	<b>KVDD0082 Fractionation trend</b> KVDD0082_fraction_section.pdf
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## LIST OF ATTACHMENTS

<b>Attachment 1</b>	<b>Location And Access Attachments</b> Fig_1_KV_Location.jpg
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<b>Attachment 2</b>	<b>Geology Attachments</b> KV_Regional_Geol_Tenure_0720 (2).JPG
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<b>Attachment 3</b>	<b>Data Review Attachments</b> OreEx_June costings.xlsx
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<b>Attachment 4</b>	<b>Drilling Attachments</b> Kathleen Valley Drilling data.7z
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## ATTACHMENTS SUBMITTED SEPARATELY

# 1. Bibliographic Data Sheet

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Project Name: Kathleen Valley Lithium  
Combined Reporting Number:  
Tenement Numbers: M 36/00459, M 36/00696  
Tenement Operator(s): LRL (AUST) PTY LTD  
Report Type: Co-Funded Drilling  
Report Title: Kathleen Valley EIS Final Geological Report

Report Period: 1 June 2022 to 31 May 2023  
Author: Sam CAMPBELL  
Submitted By: Sam CAMPBELL  
Report Date: 30 November 2022

Map Sheets: *1:250,000 Map Sheet* *1:100,000 Map Sheet*  
SG51-13 (SIR SAMUEL) 3043 (MOUNT KEITH)

Target Commodity: LITHIUM, TANTALUM  
Prospects Drilled: NW Flats  
PoW Number: 106323  
Geophysical Survey Reg No:  
Assays: XRF suite + Li2O ICP

## Abstract

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**Location:** The Kathleen Valley Project is located approximately 60km North of Leinster town site on the western edge of the Mt Keith - Perseverance Greenstone Belt which is part of the much larger Norseman-Wiluna Belt. Locally the drill site is located on the north side of Jones Creek accessed via Kathleen Valley road from Goldfields Highway.

**Geology:** The Kathleen Valley pegmatite swarm is hosted in a gabbroic - mafic unit bounded to the east by a boulder conglomerate known as the Jones Creek Conglomerate and to the North and West by a intrusive granitic unit. Mineralised pegmatites almost exclusively occur in the gabbro and pinch out rapidly when intruding into the Jones Creek conglomerate.

Host rock is described as a Glomeroporphyritic, chlorite altered, am - pf - >py > cpy > po Gabbro.  
The target pegmatite at Kathleen Valley is described as qz - pf - msc - spodumene - tantalite - lepidolite Pegmatite.

Regolith profiles are generally shallow with TOFR from 0 - 25m below surface.

**Work Done:** 2 deep diamond drill holes were drilled off RC precollars using different drilling contractors. The drilling contractors used were OreEx drilling for the RC pre-collars and DDH1 for the NQ2 diamond tails. Drilling commenced on the 21<sup>st</sup> June 2022 and was completed 8<sup>th</sup> July. Downhole surveys were completed by the drilling crews using Axis Champ survey tools and core was orientated each run of the diamond tail. The core was then processed by LioneTown field staff on site. Data collected prior to laboratory analysis included geological, structural, RQD, Geotech and density. Core deemed to be relevant to the ore body was then cut onsite, sampled and sent to Nagrom Laboratory services for analysis.  
POW number current during the drilling period is **106323**.

**Results:** The two holes drilled are identified as KVDD0081 and KVDD0082. Both holes intercepted pegmatitic units around expected depths (approximated 400 and 550m away from the nearest existing drill hole). The mineralogy of the intercepted pegmatites were described as 'quartz - feldspar - biotite - lepidolite > spodumene'. Preliminary assessment of the geochemical data suggests a trend of fractionation increasing to the South East. Further analysis and drilling will contribute to identifying the source granite of the Kathleen Valley pegmatite swarm.

In relation to the current resource, assay results indicate little to no lithium bearing minerals present but elevated Tantalum and similar mineralogy to the known Kathleen Valley pegmatites indicate the units are related.

**Conclusion:** Drilling conducted by LioneTown resources targeting the down dip and western extension of the

Kathleen Valley pegmatite swarm has confirmed the existence of related pegmatites in the target areas.

Mineralogy and orientation of the pegmatitic units indicate they are related to the pegmatites observed in the known resource although not mineralised. Geochemical data has also indicated a fractionation trend increasing to the South East

Composition and morphology of the pegmatitic units will require further study to gather understanding and eventually contribute to an updated resource.

Drilling Summary:

Hole Type	No. of Holes	Total Drilled (m)
RC pre-collar with NQ2 diamond tail	2	1400

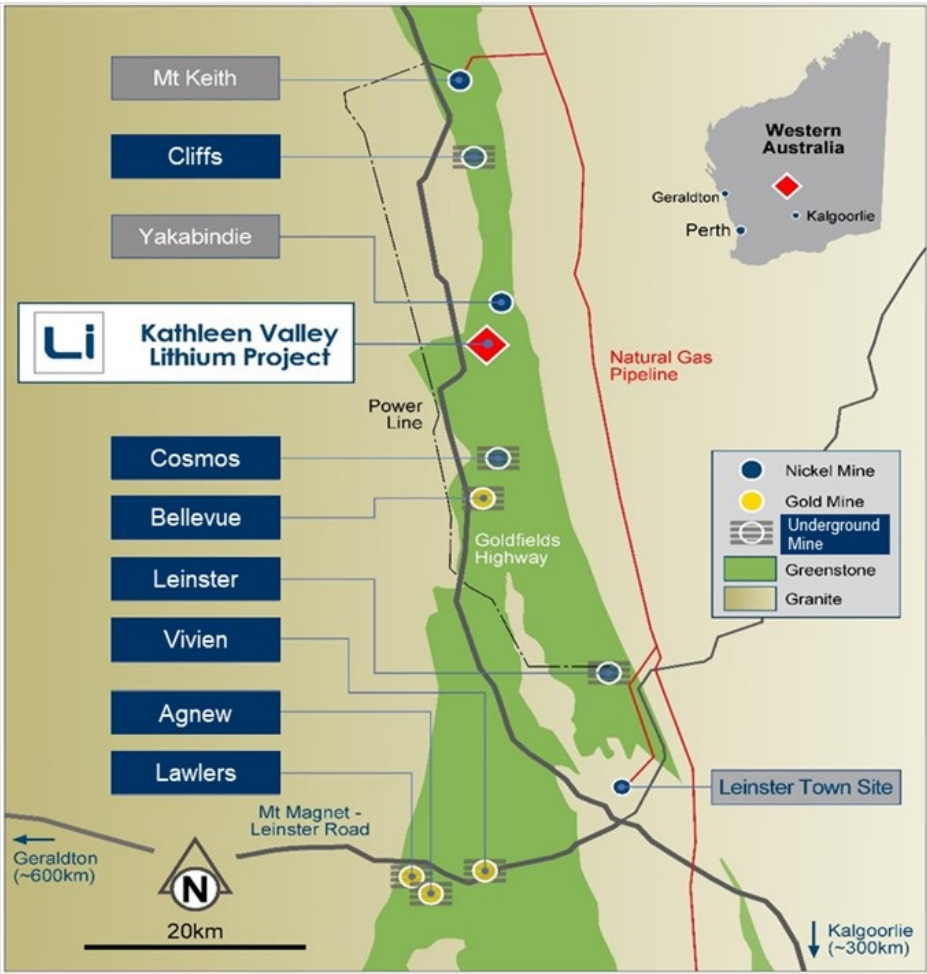
## 2. Introduction

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Liontown Resources Kathleen Valley Lithium - Tantalum project is located approximately 60km North of Leinster town site on the western edge of the Mt Keith - Perseverance Greenstone Belt which is part of the much larger Norseman-Wiluna Belt. As of April 2021 the combined resource of 158mt @ 1.4% Li<sub>2</sub>O and 130ppm Ta<sub>2</sub>O<sub>5</sub>. Diamond drilling was completed in Q4 21-22 to Q1 22-23 targeting the down dip portion of the Kathleen Valley pegmatite swarm west of the known resource. The target zone is approximately 500m away from the closest drilling intercept and has the potential to open up the exploration area kilometres to the west. Geochemical data from these holes will also contribute to defining the source granite of the Kathleen Valley pegmatite swarm.

### 3. Location and Access Details

The Kathleen Valley Project is located approximately 60km North of Leinster town site on the western edge of the Mt Keith - Perseverance Greenstone Belt which is part of the much larger Norseman-Wiluna Belt. Locally the drill site is located on the north side of Jones Creek accessed via Kathleen Valley road from Goldfields Highway.

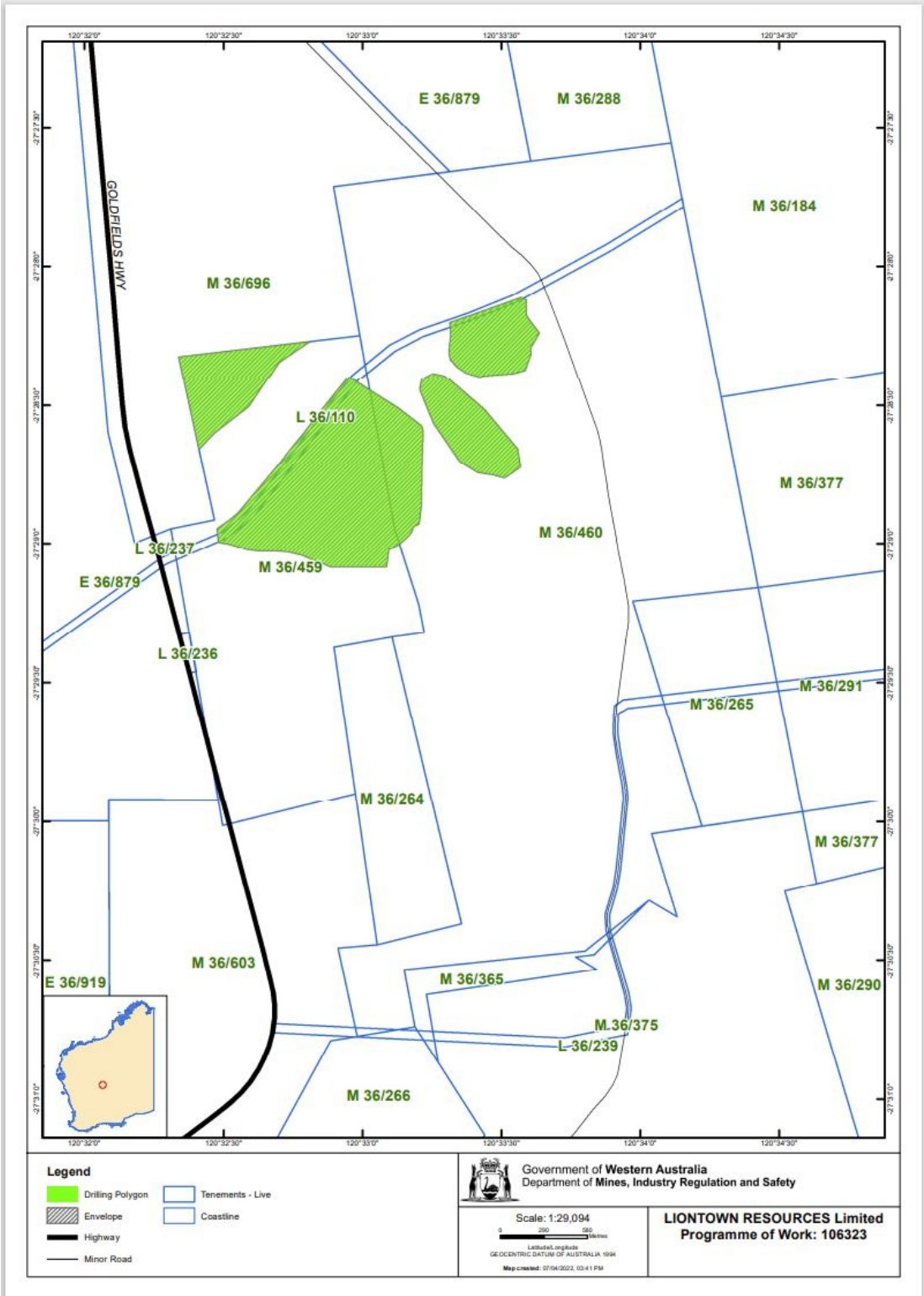


Kathleen Valley Location

# 4. Tenement Details

## Tenement Information

Tenement	Grant Date	Expiry Date	Holder	Expenditure (\$)	Area Size (KM2)	Area Size (BLK)
M 36/459	29/04/1999	03/05/2041	LRL (AUST) PTY LTD	32700	3.27	0
M 36/696	13/01/2022	12/01/2043	LRL (AUST) PTY LTD	50700	5.07	0



Tenure PoW



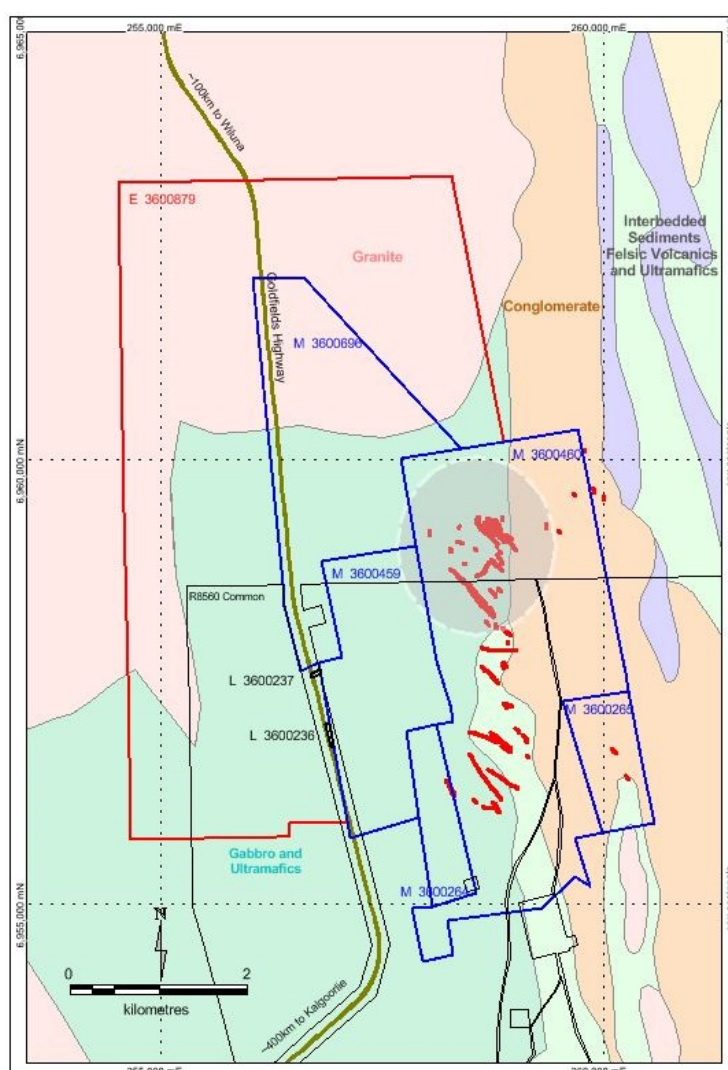
## 5. Geology

### 5.1 Regional Geology

The Kathleen Valley Lithium - Tantalum project sits on the western edge of the Mt Keith - Perseverance Greenstone Belt which is part of the much larger Norseman-Wiluna Belt.

### 5.2 Local Geology

The Kathleen Valley pegmatite swarm intrudes a gabbroic mafic unit that is bound to the east by a boulder conglomerate known as the Jones Creek Conglomerate. A intrusive granite body lies North and West of the project area. Pegmatite outcrops in multiple locations and is generally subhorizontal - moderately dipping West - WSW, . Pegmatites mineralogy is generalised to Quartz - feldspar - micas - spodumene tantalite. Ultramafics and metasedimentary units outcrop to the east and south of deposit.



KV Geology\_Tenure

## 6. Previous Exploration

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Historical exploration has mostly consisted of Mafic hosted gold and nickel targets. Remelius resources have undertaken several campaigns involving field mapping and shallow drilling methods for gold and nickel. Several historical workings also exist on the tenements targeting copper and other sulphides.

## 7. Current Exploration

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Exploration conducted by Liontown Resources is exclusively targeting the expansion of the lithium - tantalum resource. Geochemical data collected during the recent diamond drilling campaign will be used to confirm the fractionation direction across the deposit. This will contribute to locating the source of the Kathleen valley pegmatite swarm and in turn aid in identifying other proximal exploration targets of a similar distance from the source granite.

## 8. Current Exploration Summary

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### 8.1 Data Review

Previous drilling, field mapping, geochem, assay and structural data has been used to identify the exploration targets.

### 8.2 Drilling

Diamond drilling and RC drilling were conducted concurrently as exploration and grade control activities respectively.

### 8.3 Other

Other

## 9. Conclusion and Recommendations

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EIS co-funding of drilling conducted at Liontown Resources Kathleen Valley Project has contributed to geological, geochemical and structural understanding of the exploration targets west of the known deposit. Fractionation trends outlined in the assay results indicate increasing fractionation towards the SE. Elevated Nb/Ta ratios observed in permatitic units of KVDD0081 0082 confirm fractionation increasing to the SE. Further analysis is required for a more accurate vector of fractionation.

Exploration targets can now be informed by a trend of fractionation expanded to the west of the known deposit. Proximity to the granitic body North and West of Kathleen Valley can be used as reference for new exploration targets.

# 10. Appendices

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No Appendices as text are available

# 11. Expenditure Summary

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See calculations and costings summary attached