



ZENITH
MINERALS

**2024 LITHIUM
FORWARD PROGRAM**



**Focused on the discovery
and advancement of battery
metal resource projects**

Investment Highlights



100% owner of the highly prospective Split Rocks and Waratah Well lithium projects in Western Australia



Highly leveraged to future green energy demand



Drill ready lithium targets – major focus of 2024 exploration programs



Additional near-term activity on gold projects – Red Mountain – drill ready

Australian - Project Portfolio

Primary focus on Split Rocks and Waratah Well lithium Projects with drill campaign ready to commence on 6 key targets outside the existing lithium mineral resource at Split Rocks

Project	Ownership %	Other Interest
Waratah Well	100%	
Split Rocks	100%	
Hayes Hill	Right to acquire 100%	
Red Mountain	100%	
Earaheedy	JV – 25% Free Carried Interest	75% Rumble Resources (ASX:RTR)



Zenith Lithium Projects



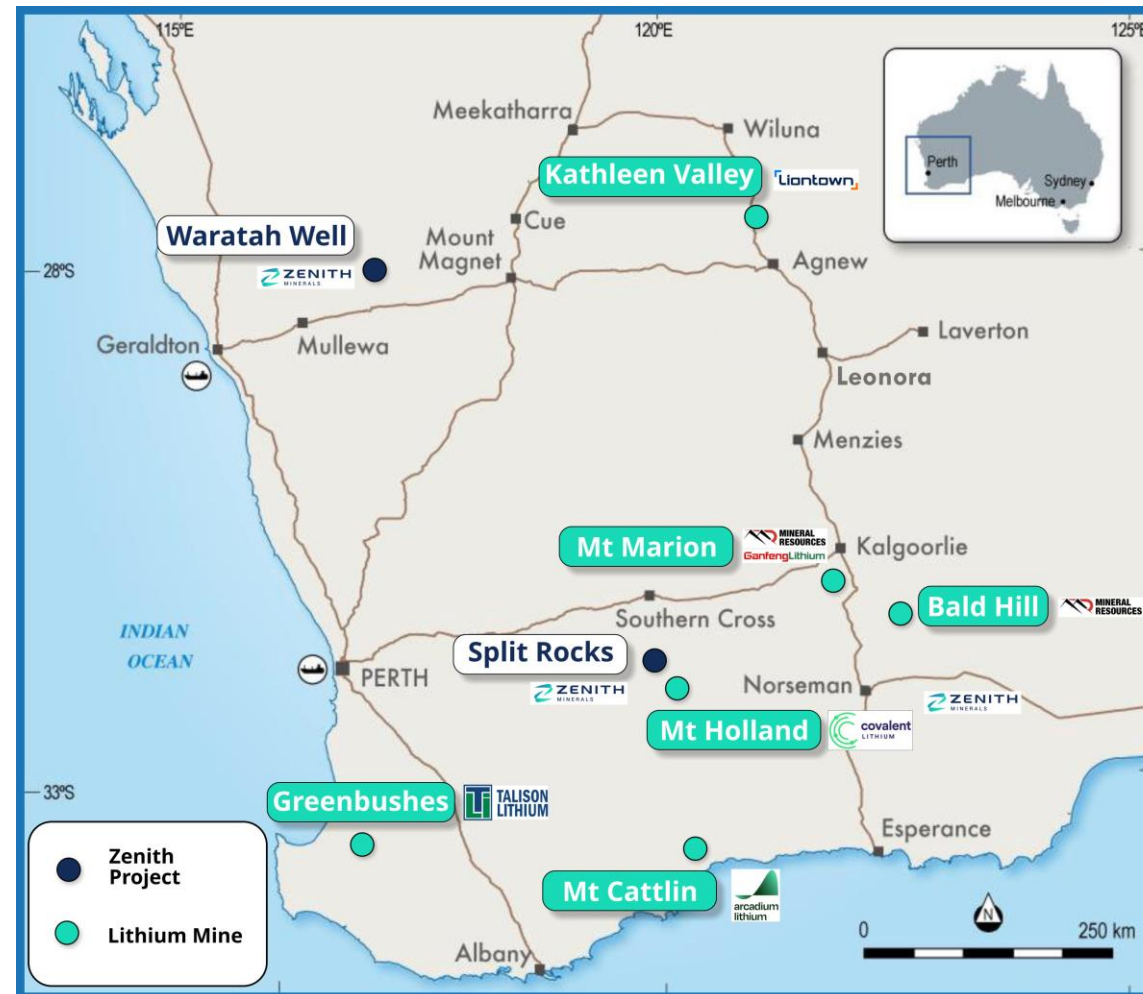
Split Rocks

- JORC Inferred Mineral Resource **11.9Mt @ 0.72% Li₂O, 415ppm Cs, 75ppm Nb, 217ppm Sn and 59ppm Ta** (0.5% Li₂O cut-off grade)¹
- Best intersections
 - 26m @ 1.2% Li₂O
 - 10m @ 1.7% Li₂O
 - 13m @ 1.9% Li₂O



Waratah Well

- 10m @ 1.4% Li₂O including 6m @ 2.0% Li₂O²



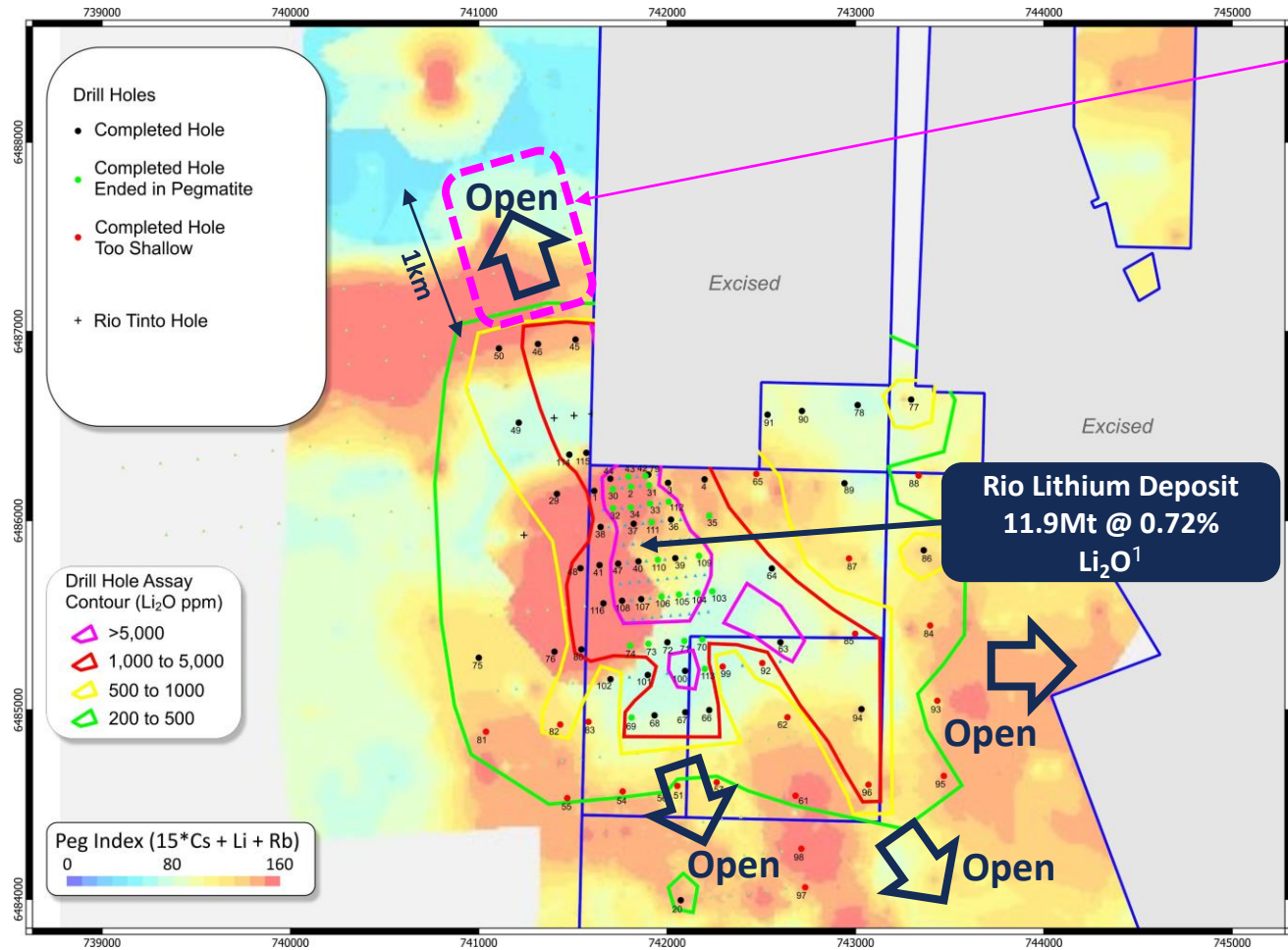
Notes: 1. ZNC: ASX Release 28-Sep-23
2. ZNC: ASX Release 24-Jan-23

Lithium– Key Targets

- **Drilling to focus on six key highly prospective lithium targets at Zenith’s 100% owned Split Rocks project.**
 - **Five targets are situated along the 13.5km long Rio Lithium Mineral Resource trend, plus**
 - **Drill testing of the previously undrilled 9km long Cielo geochemical anomaly, 35km south of Rio.**
- **More than eighty prospective lithium targets identified at Split Rocks¹ provide a robust pipeline for future exploration.**
- **Waratah Well lithium project further surface work will be undertaken prior to drill testing of high-grade targets to refine position of preferred pegmatite host rock sequence.**

¹ Refer ZNC: ASX Release 7 Dec 23

Split Rocks – Rio Prospect – NW Step Out



NW STEP-OUT TARGET

- Rio lithium pegmatite open ended
- Drilling to test another 1km of strike NW of Rio Lithium Deposit
- Strong surface geochemistry
- 35 RC holes fully permitted and ready to drill
- Initial 16 RC holes planned

Lithium Contours from Drilling over Image of Soil Geochemistry

Split Rocks – Strong Exploration Upside Outside Rio Resource Area

Lithium fertility of the Forrestania belt proven – Host to 3 known lithium deposits (Mt Holland Lithium Mine¹, Rio Lithium Deposit² & South Ironcap Lithium Deposit³)

ZNC has >80 untested geochemical / geological targets within 367sq km tenure

5 PRIORITY DRILL TARGETS - BEYOND RIO LITHIUM DEPOSIT

T01 & T02

– Strong Li & Cs geochem (360ppm Li & 36ppm Cs) 4km along strike from Rio lithium mineral resource

T09 & T10

– 13.5km long, locally >110m thick pegmatite intersection with zone of high surface geochem (210ppm Li), LCT peg in historic gold drilling & old mine spoil

DFN

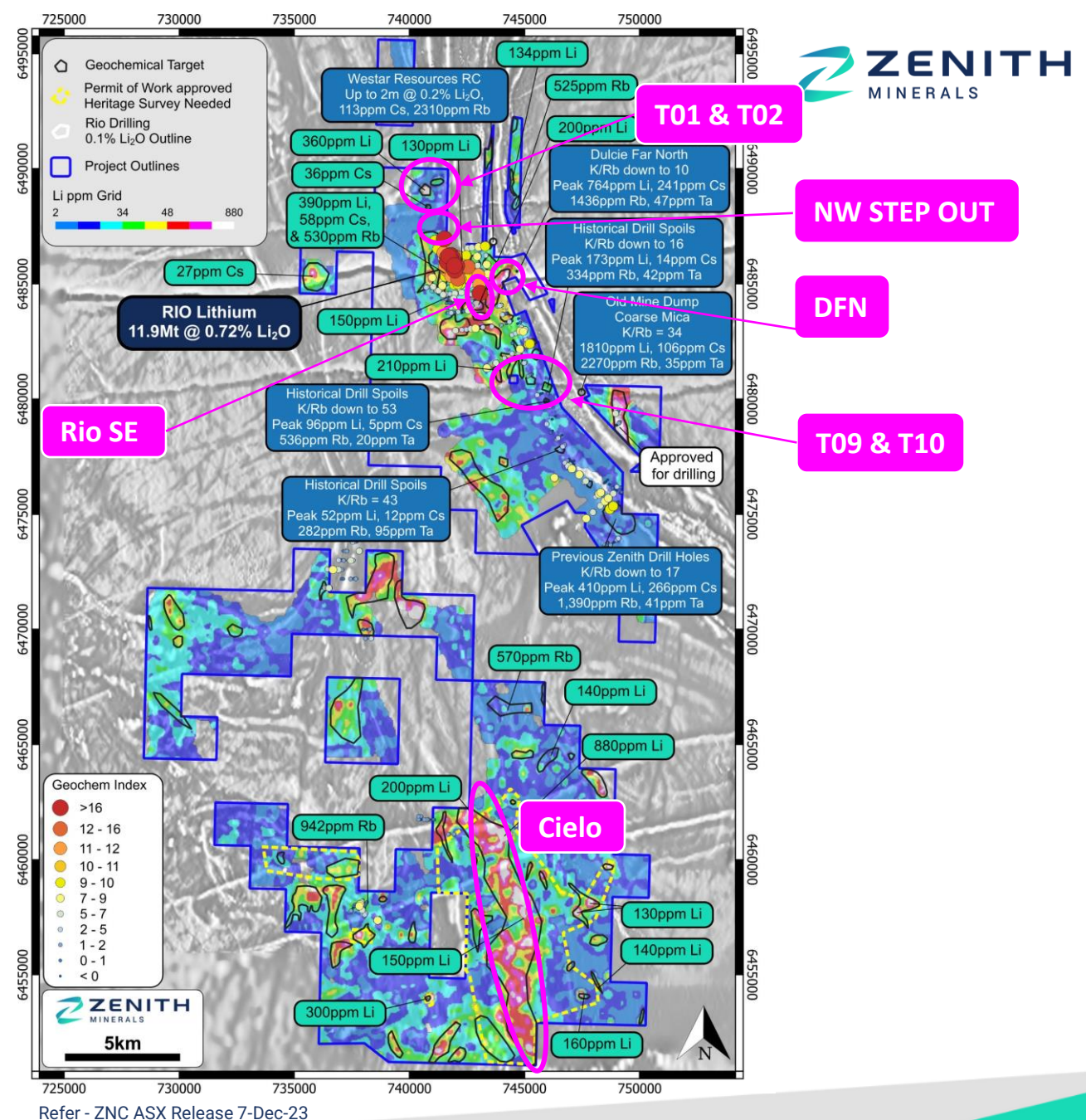
– Strong surface geochem, LCT pegmatite in gold drilling coincident with magnetic low

Cielo

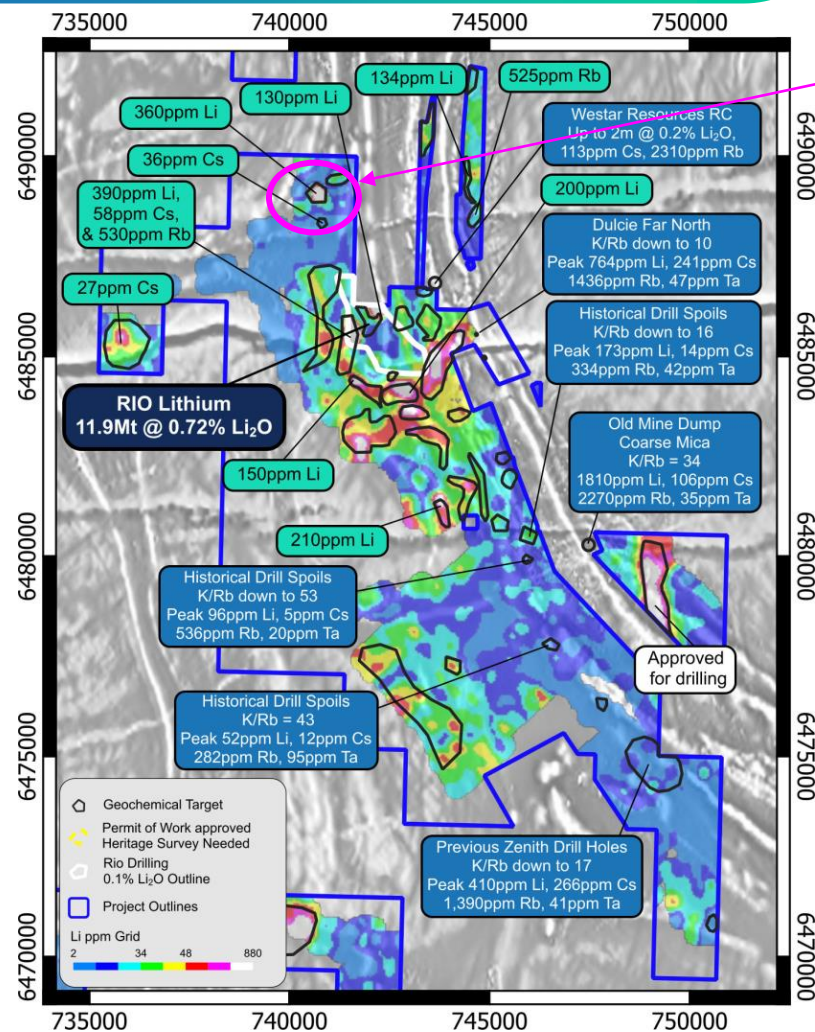
– Large geochem anomaly 9km in length by 2km wide (Cielo), peak auger values 880ppm Li

Rio SE

– Geochem index trend south of Rio Deposit



Split Rocks – T01-T02

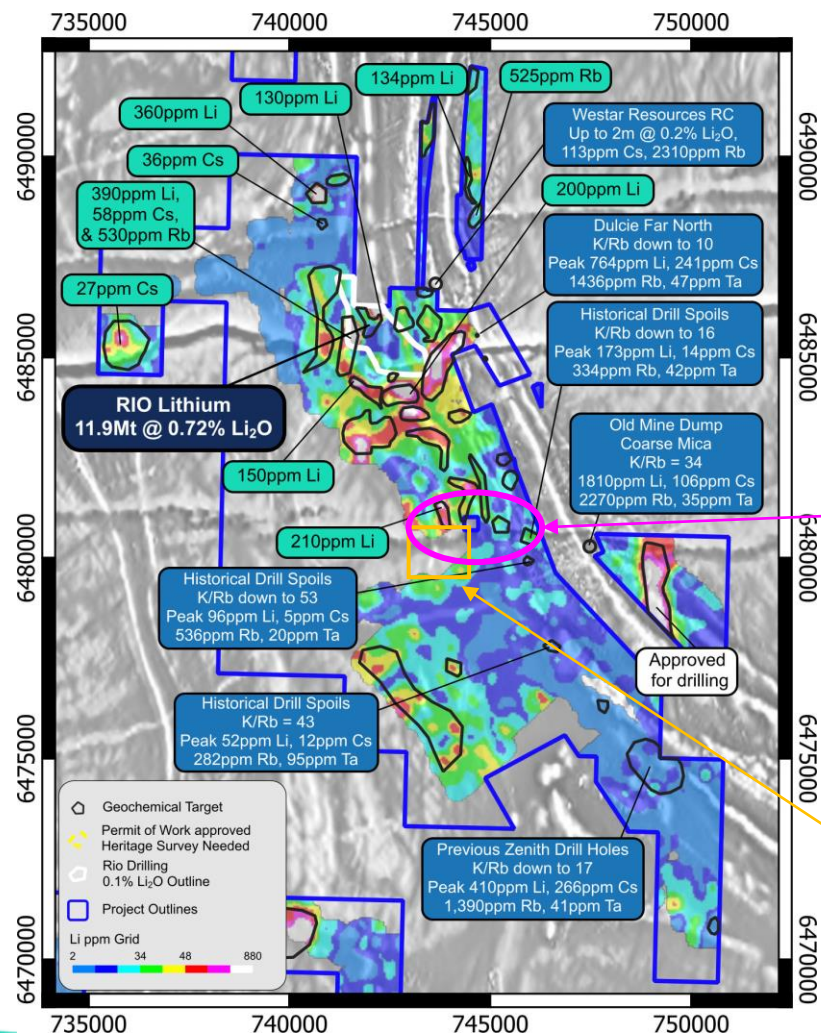


T01 – T02

- 4km north of Rio Lithium Deposit
- Peak auger 360ppm Li and separate peak of 36ppm Cs
- Rio lithium pegmatite open ended in this direction
- Closer to granite contact & therefore likely higher metamorphic grade than Rio area = spodumene potential (Refer slide #29 for background)
- No previous drilling

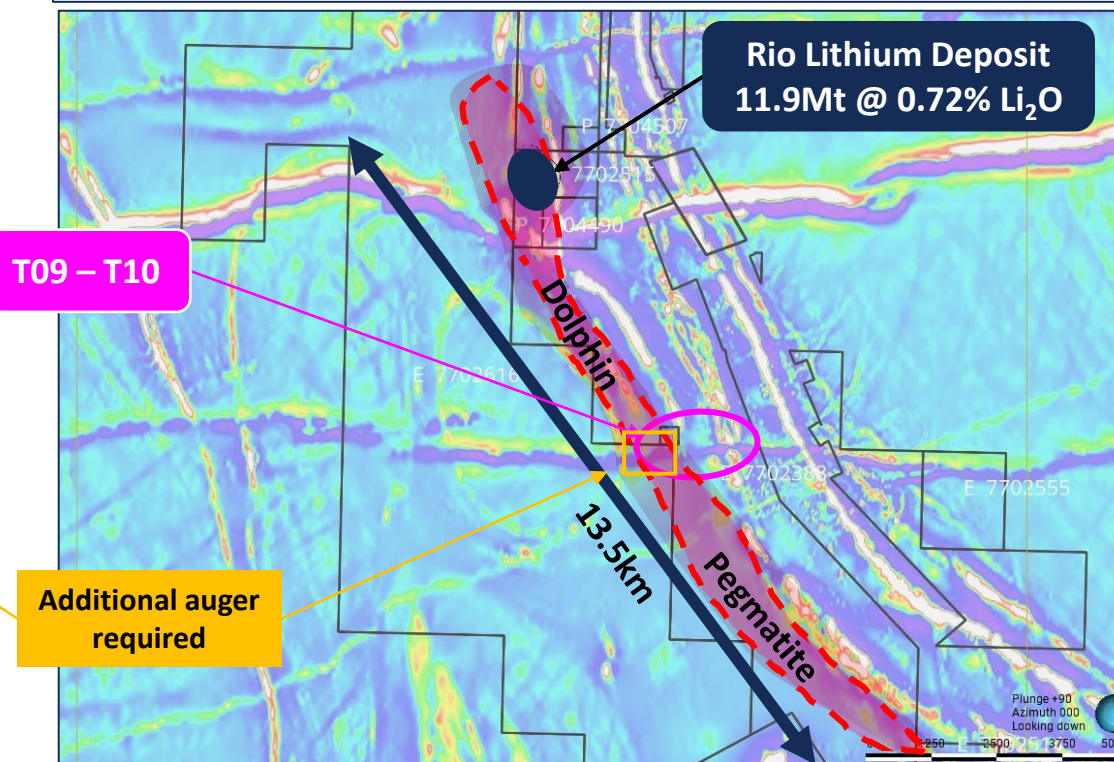
- ✓ Lithium mineralisation styles can vary significantly over relatively short distances.
- ✓ Example of another WA lithium pegmatite system Tabbatabba. 2.5km between FMG petalite deposit & ASX:WC8 Leia spodumene deposit (Refer slide #22 & #23 for background).
- ✓ Zenith's Split Rocks tenure is 45km long x 20km wide – ample space for significant variations in metamorphic grade & therefore lithium mineralogy.

Split Rocks – T09-T10

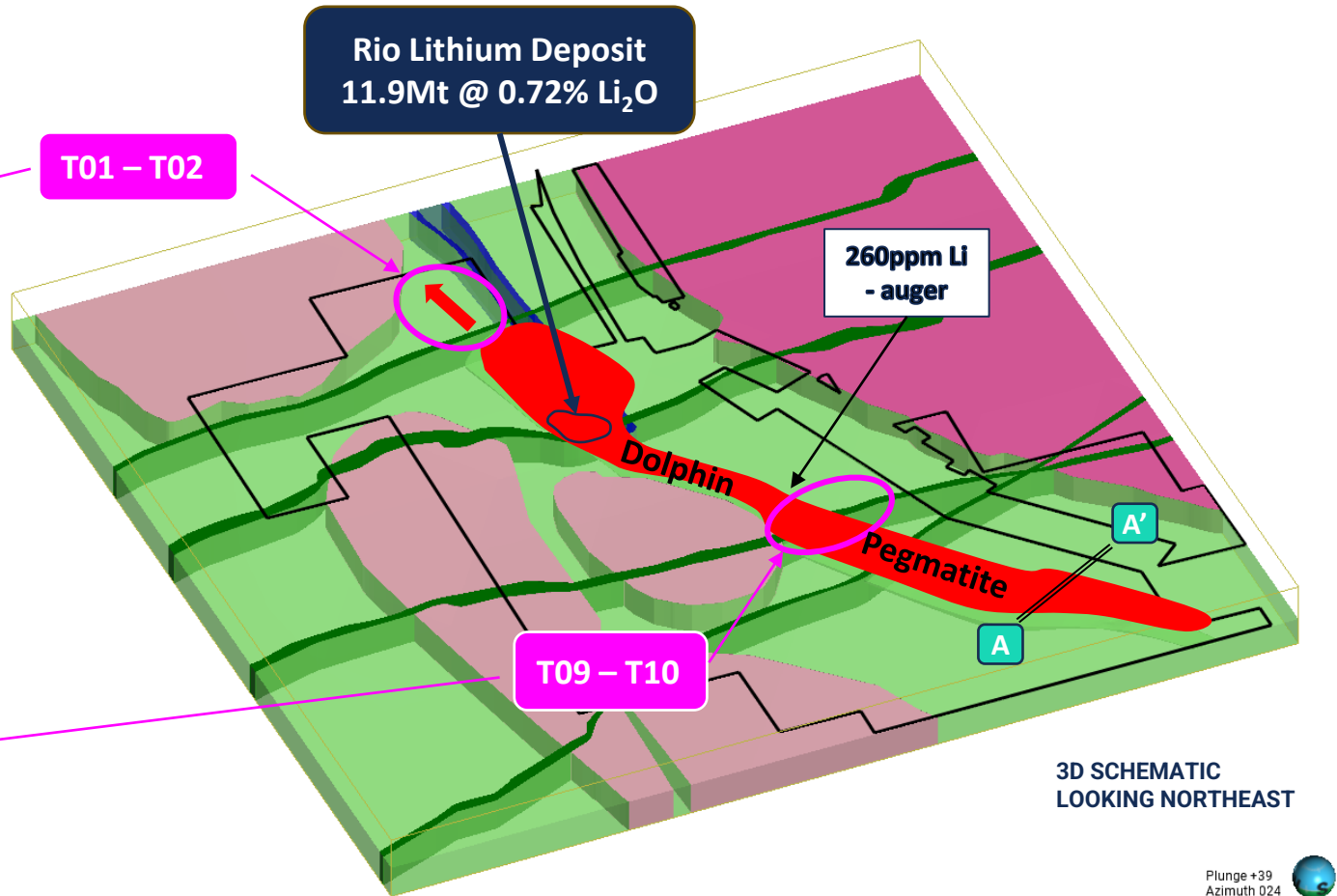
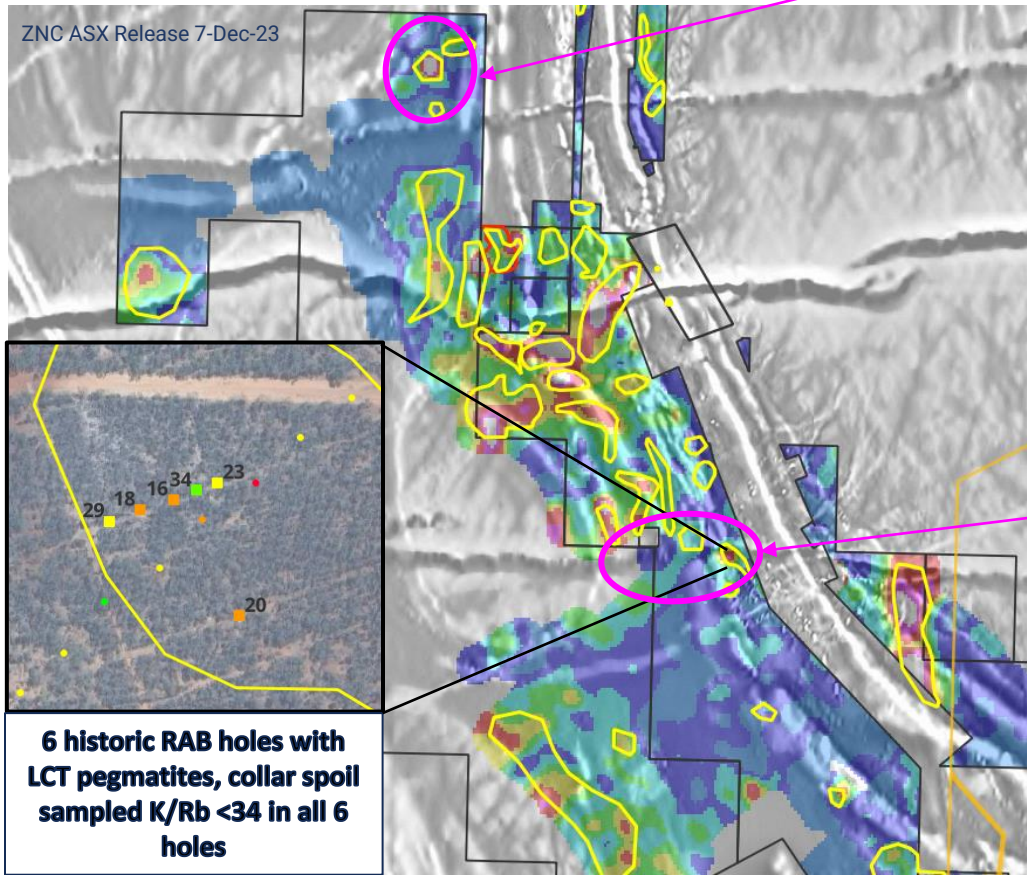


T09 – T10

- Interpreted 13.5km long, 1.2km wide, locally >110m thick “Dolphin Pegmatite” (Rio Deposit in north)
- Intersects with E-W zone of elevated surface geochem (up to 210ppm Li)
- LCT pegmatite in historic gold drilling, 10 to 15m thick in multiple RAB holes (K/Rb ratio down to 16)
- LCT pegmatite sub-crop old mine dump (K/Rb down to 34)

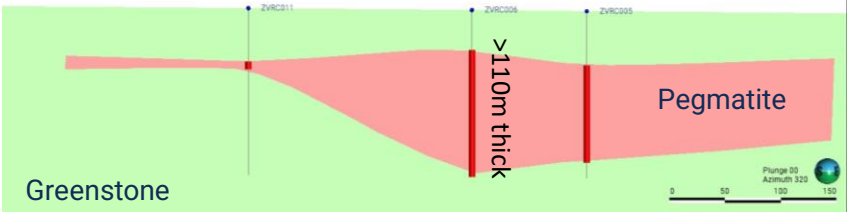


Split Rocks – T09-T10

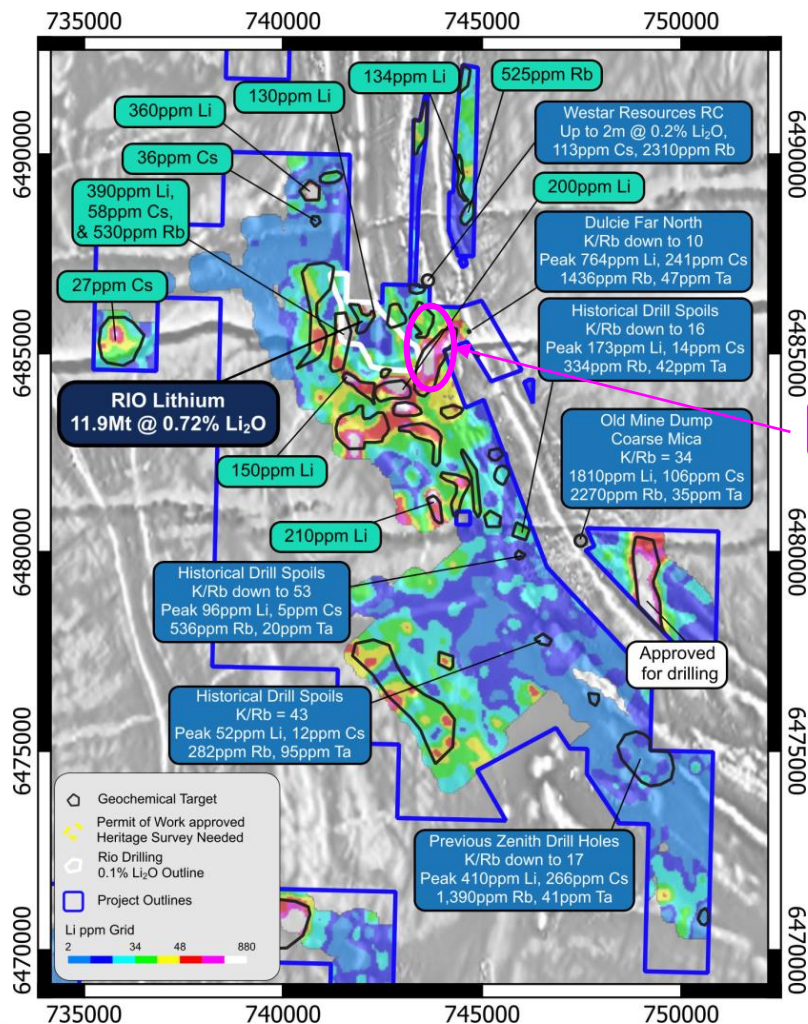


CROSS SECTION A-A'

"Dolphin Pegmatite" – Limited deeper ZNC drilling confirms very thick flat lying pegmatite in south like that at Rio Lithium Deposit, multiple pegmatite intercepts along 13.5km trend can be modelled in 3D as one very large undulating pegmatite body – Further drilling required.



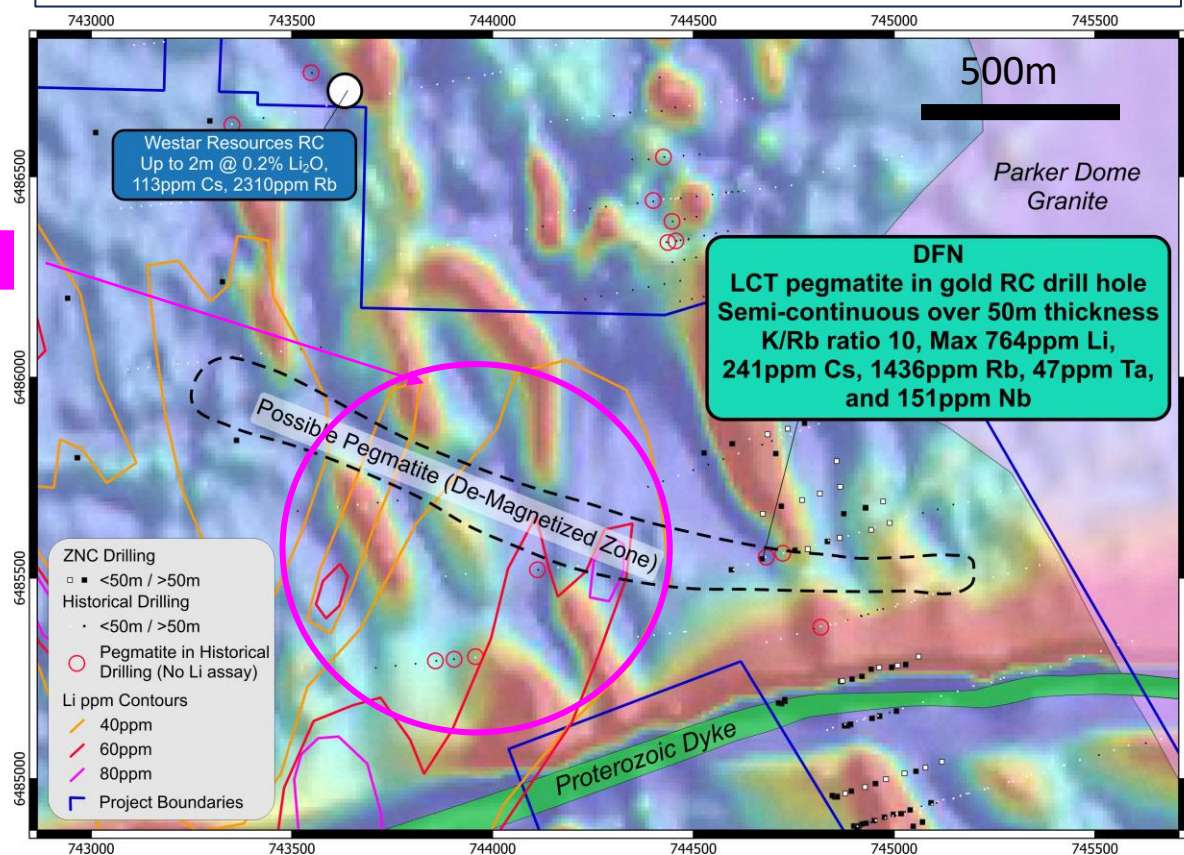
Split Rocks – DFN



DFN

- Area of strong surface geochemistry
- ~50m thick LCT pegmatite in ZNC gold RC drilling (K/Rb down to 10)
- 2km long magnetic low & along strike from ASX:WSR LCT peg (RC & AC) ¹
- Historic RAB drilling intersected pegmatites - no lithium assays

DFN



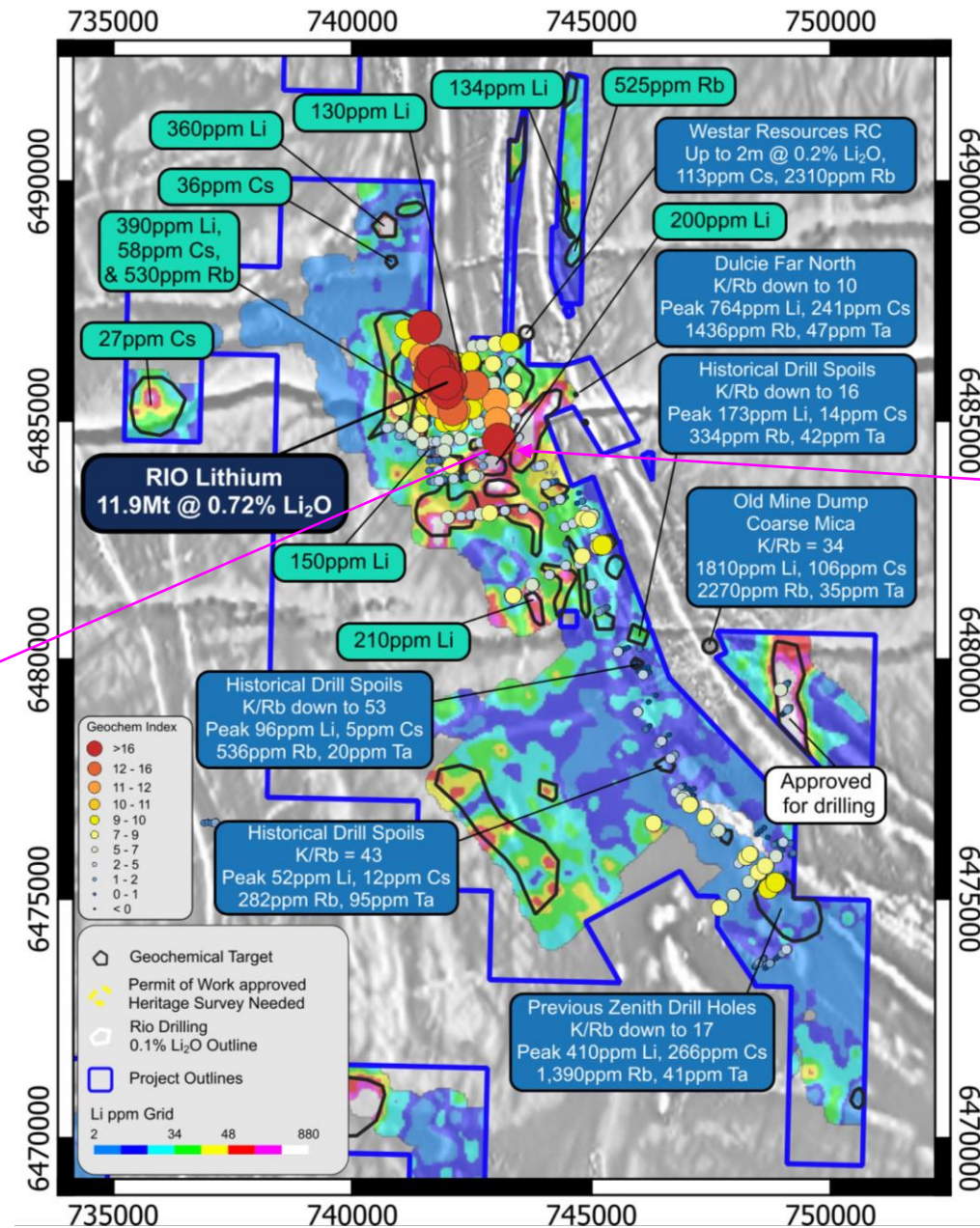
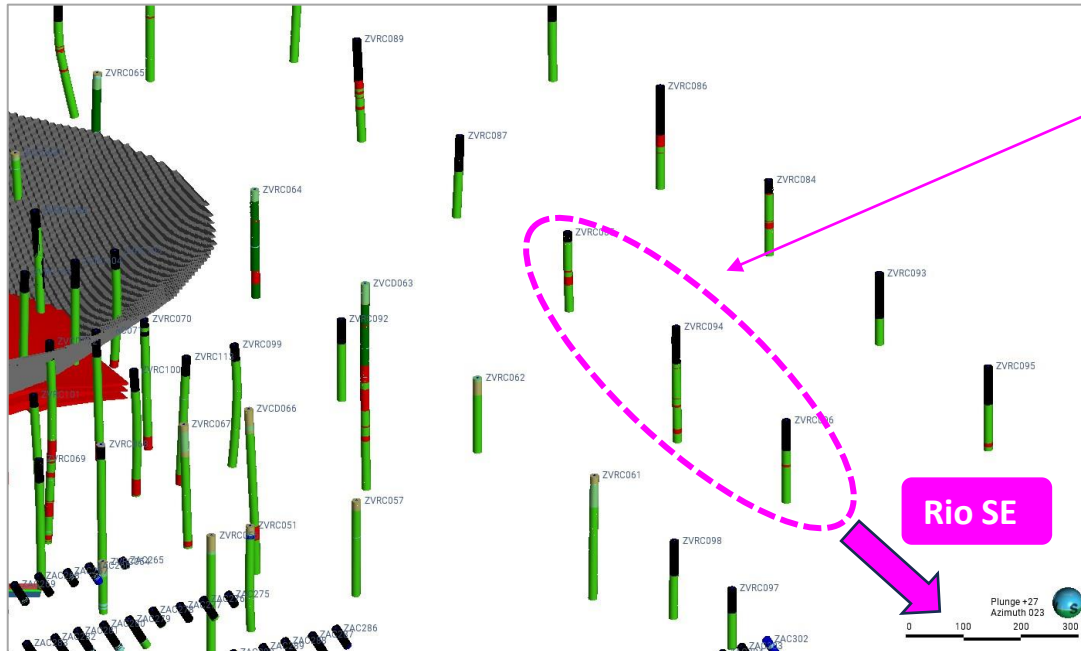
Refer - ZNC ASX Release 7-Dec-23

Notes: 1. WSR: ASX Release 30 Jan 24

Split Rocks – Rio SE

Rio SE

- ZNC developed an in-house proprietary Geochemical Index (“footprint”) based on the drill data surrounding its Rio lithium deposit.
- Separate Geochem Index trend to the east of the main Rio lithium pegmatite body, open to south-east.



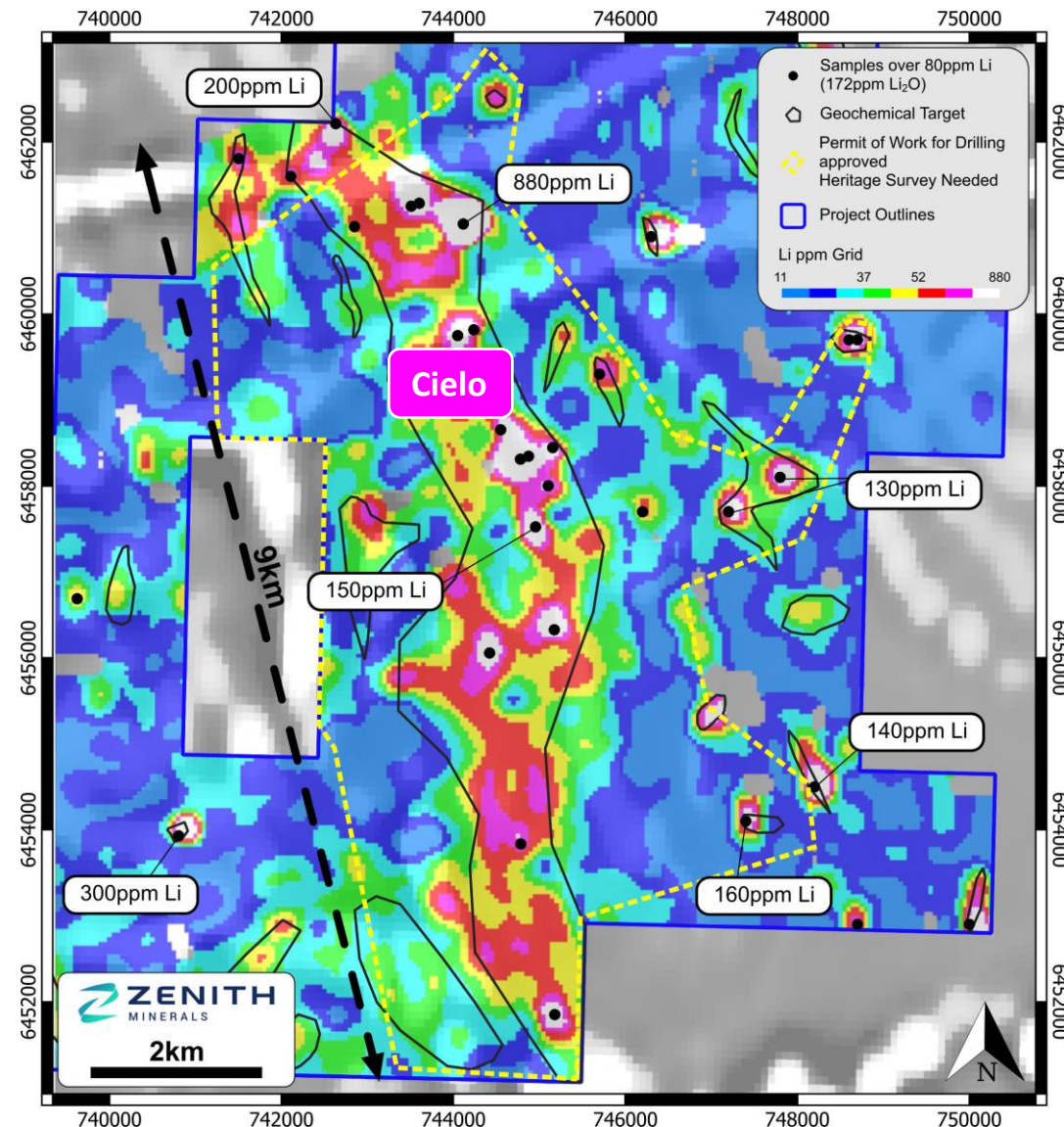
Split Rocks – Cielo

Cielo

- Cielo Target - large geochemical anomaly 9km in length by 2km wide (Cielo), peak auger values 880ppm Li – untested.
- Limited to no outcrop, thick scrub, magnetic low, within sedimentary rock sequence.
- Geochem anomaly comparable in size to the “Dolphin Pegmatite” (refer Slide #10).
- Sedimentary rocks are the host sequence to several Australian and international lithium spodumene deposits incl:
 - Bald Hills Lithium Mine¹ – WA
 - Trieste Lithium Deposit² – Canada
 - Ewoyaa Lithium Deposit³ – Ghana

Notes:

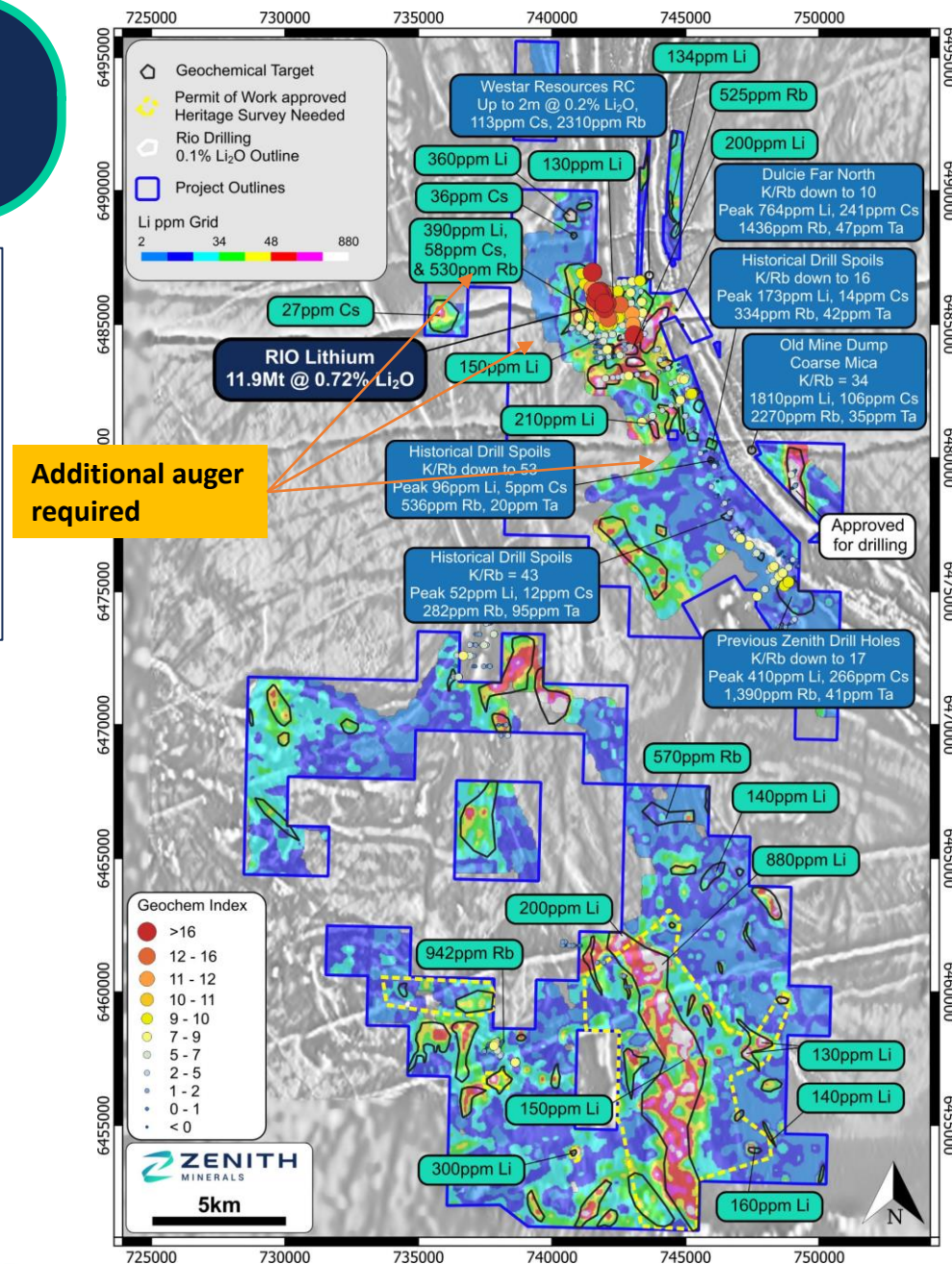
1. TAW: ASX Release 17 Apr 17
2. LLI: ASX Release 1 May 23
3. A11: ASX Release 19 Mar 24



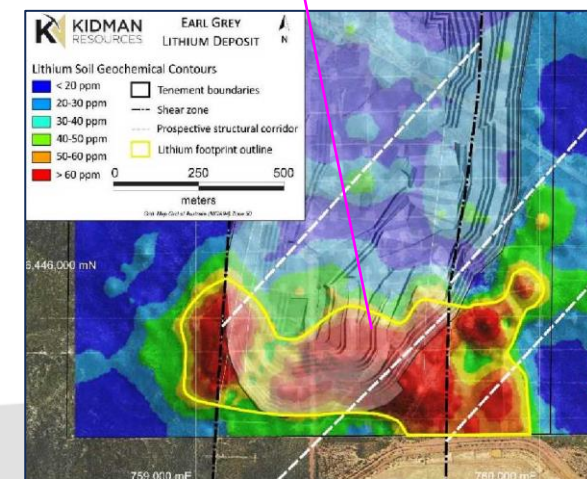
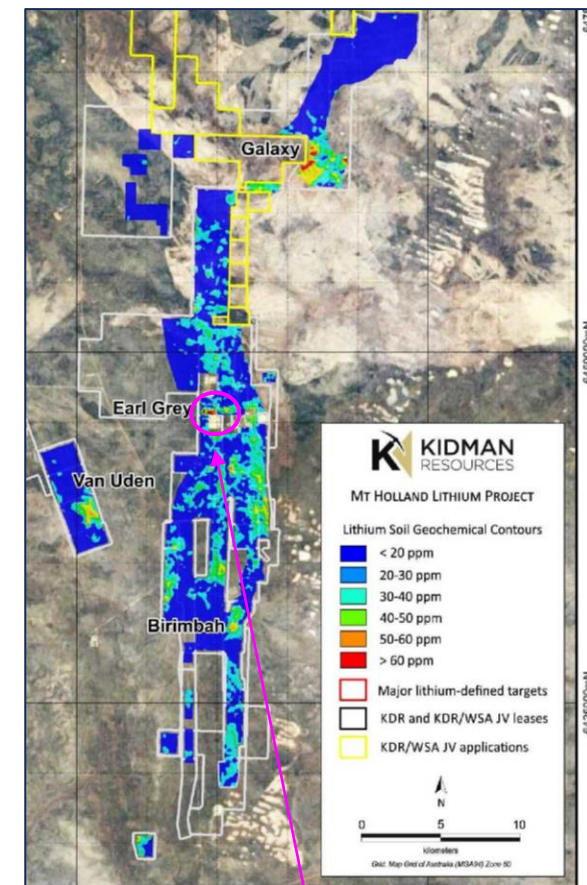
Refer - ZNC ASX Release 7-Dec-23

Split Rocks – Regional – Geochemistry

- >80 Geochemical targets¹ in ZNC tenure.
- Surface geochem expression of Mount Holland Lithium Deposit (Earl Grey)² was 1000m x 300m >60ppm Li.
- Additional auger drilling programs required WSW of Rio & SW of T09 required to fill gaps in coverage.



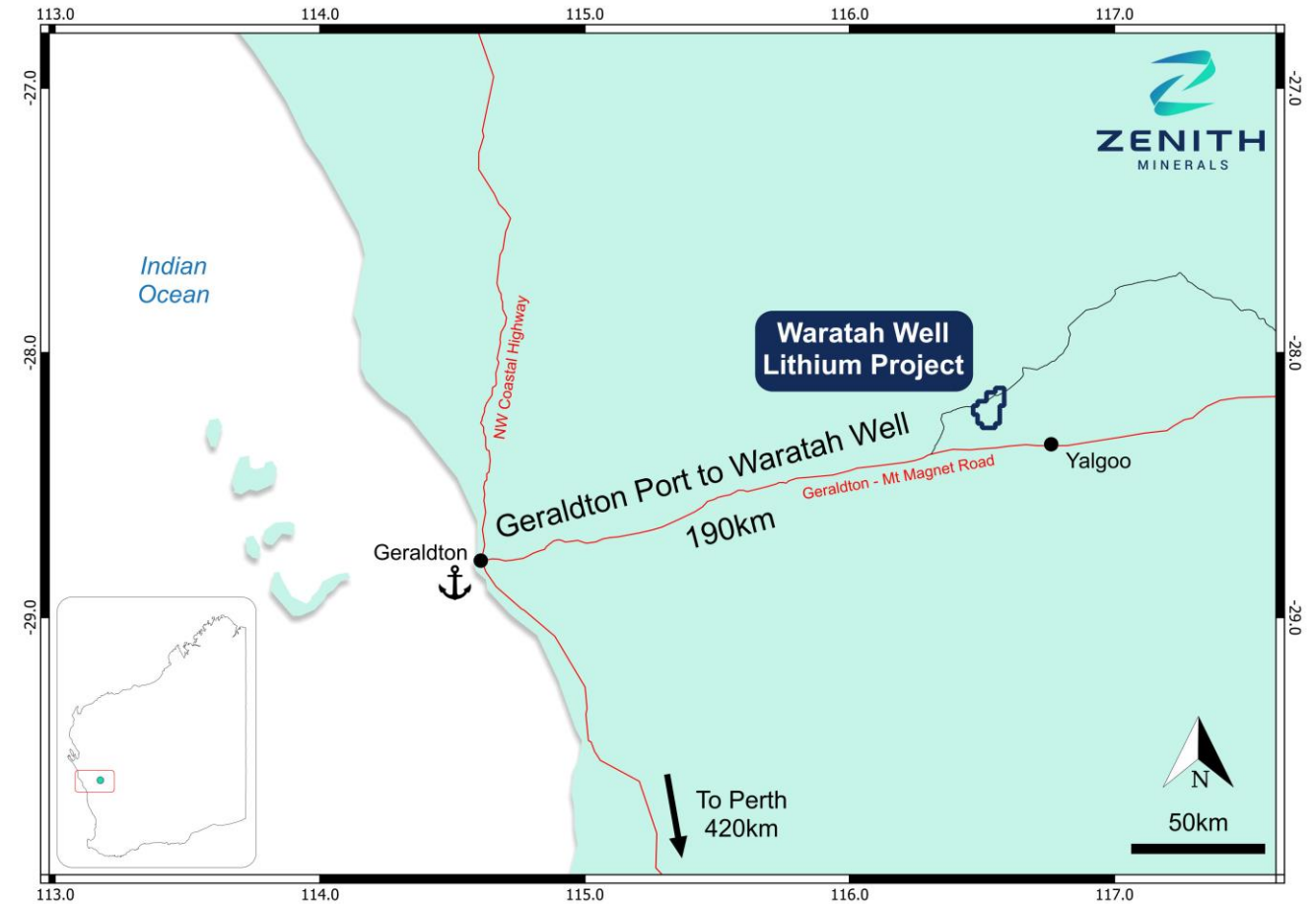
Additional auger required



Notes: 1. ZNC ASX Release 7-Dec-23
2. KDR: ASX Release 16 Apr 2019

Waratah Well

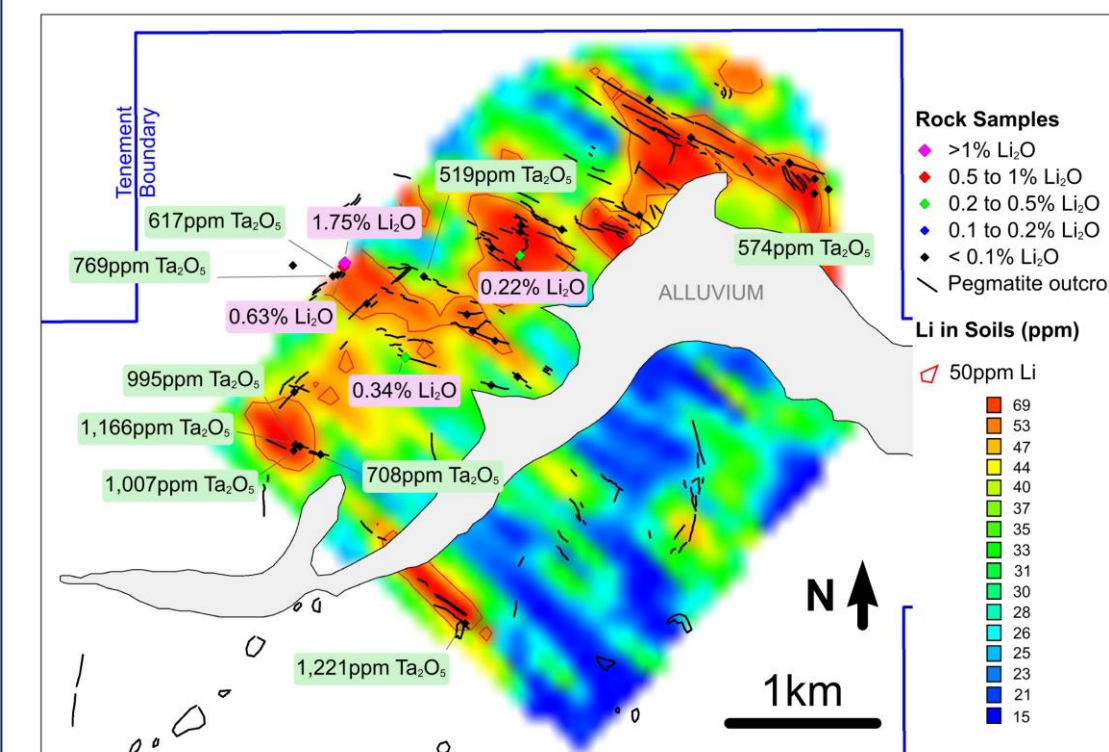
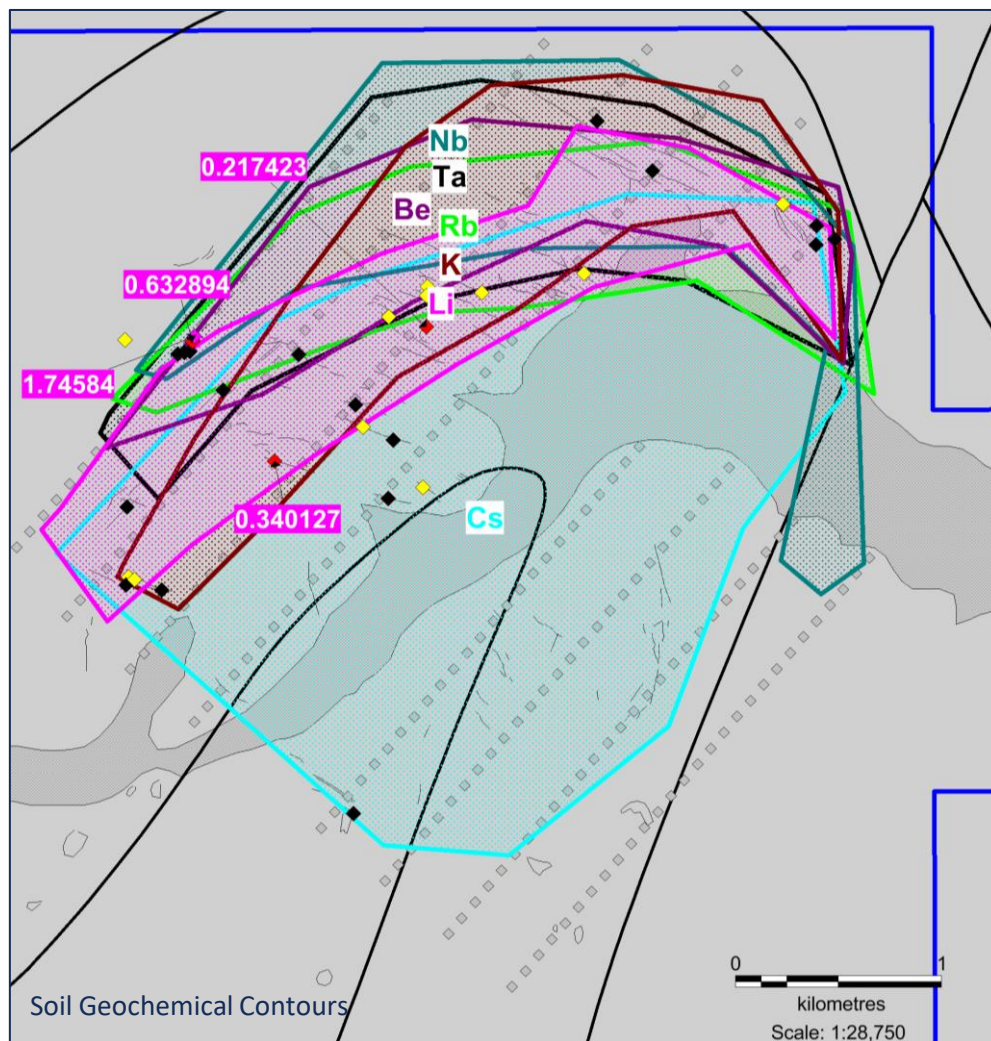
- ✓ Located 20km NW of Yalgoo in the Murchison Region, 190km from the Geraldton Port.
- ✓ Discovery of shallow blind high-grade lithium mineralisation in RC drilling in pegmatites just north of an outcropping 4 x 3km pegmatite field.
- ✓ Pegmatites shallow dipping up to 24m thick.
- ✓ Substantial drilling program planned to define extents of lithium mineralization.
- ✓ Potential direct shipping opportunities with proximity to Geraldton Port .



Waratah Well



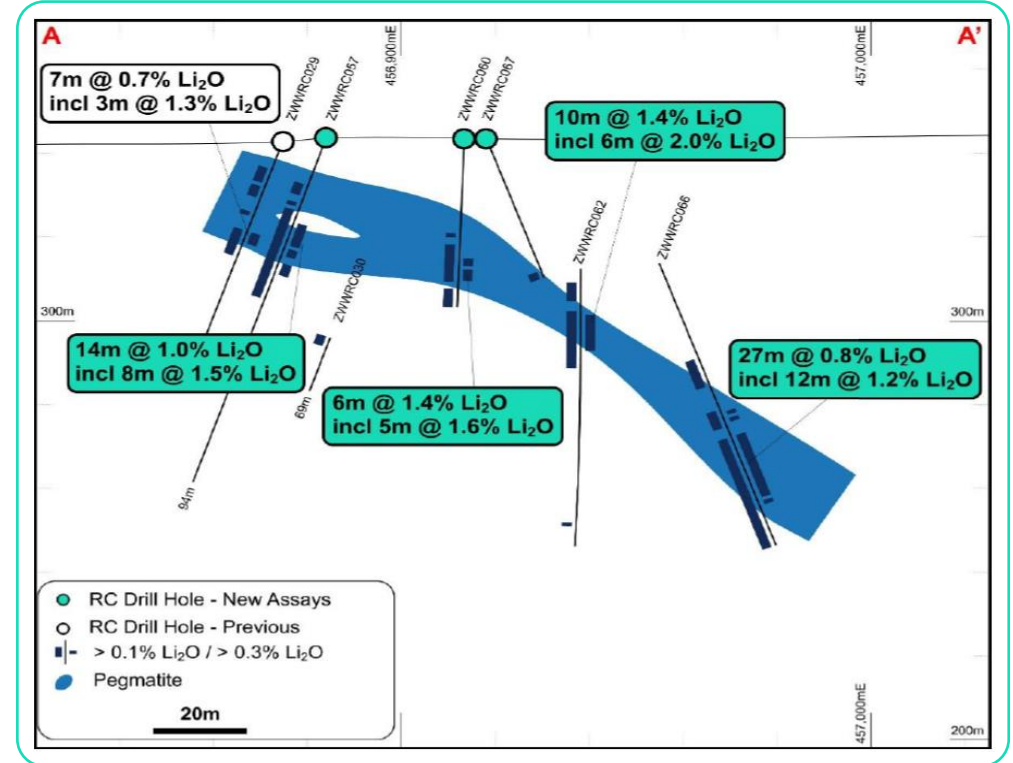
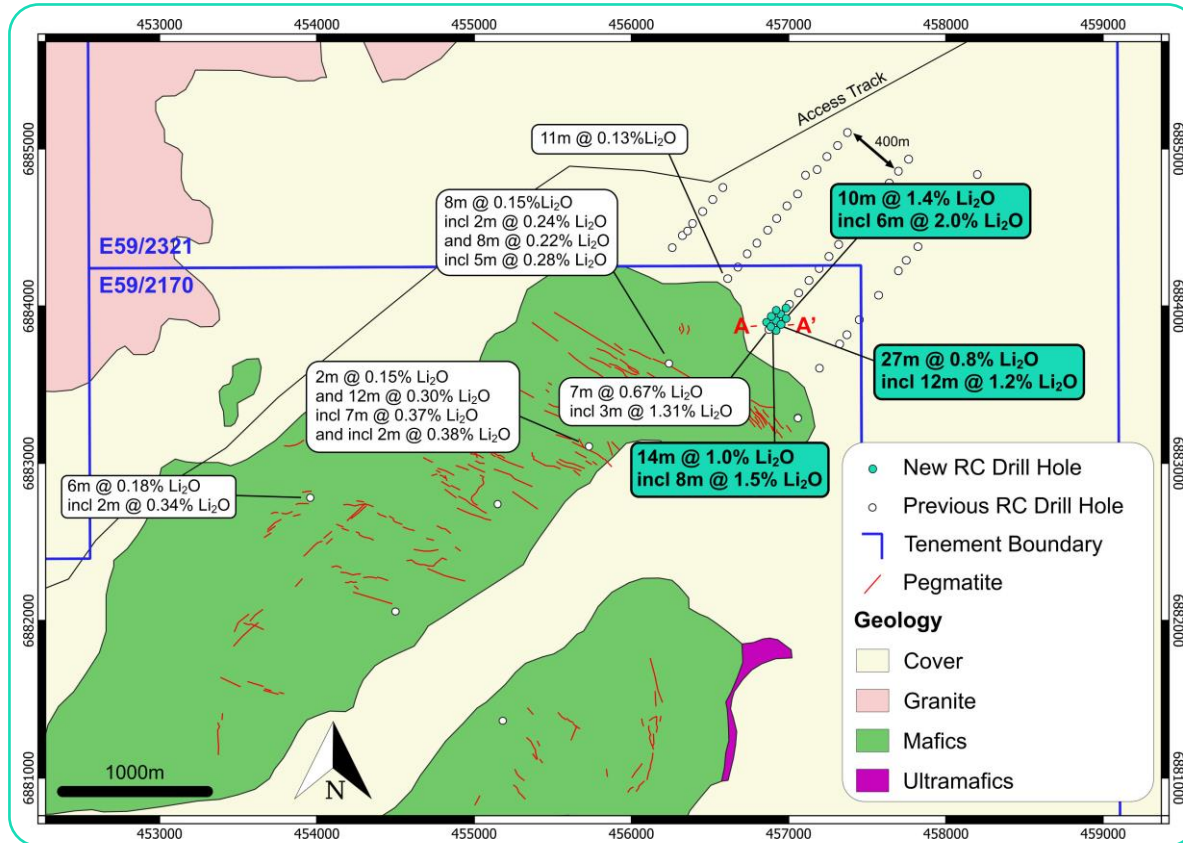
- 4km x 3km LCT pegmatite field open under cover to NE
- Gently dipping to flat lying pegmatites
- High Ta
- Geochem, mineralogy and wide spaced (1km) RC drilling shows pegmatite field is zoned



Notes: refer ZNC: ASX Releases 27-Apr-18, 30-Apr-20 & 3-Nov-21

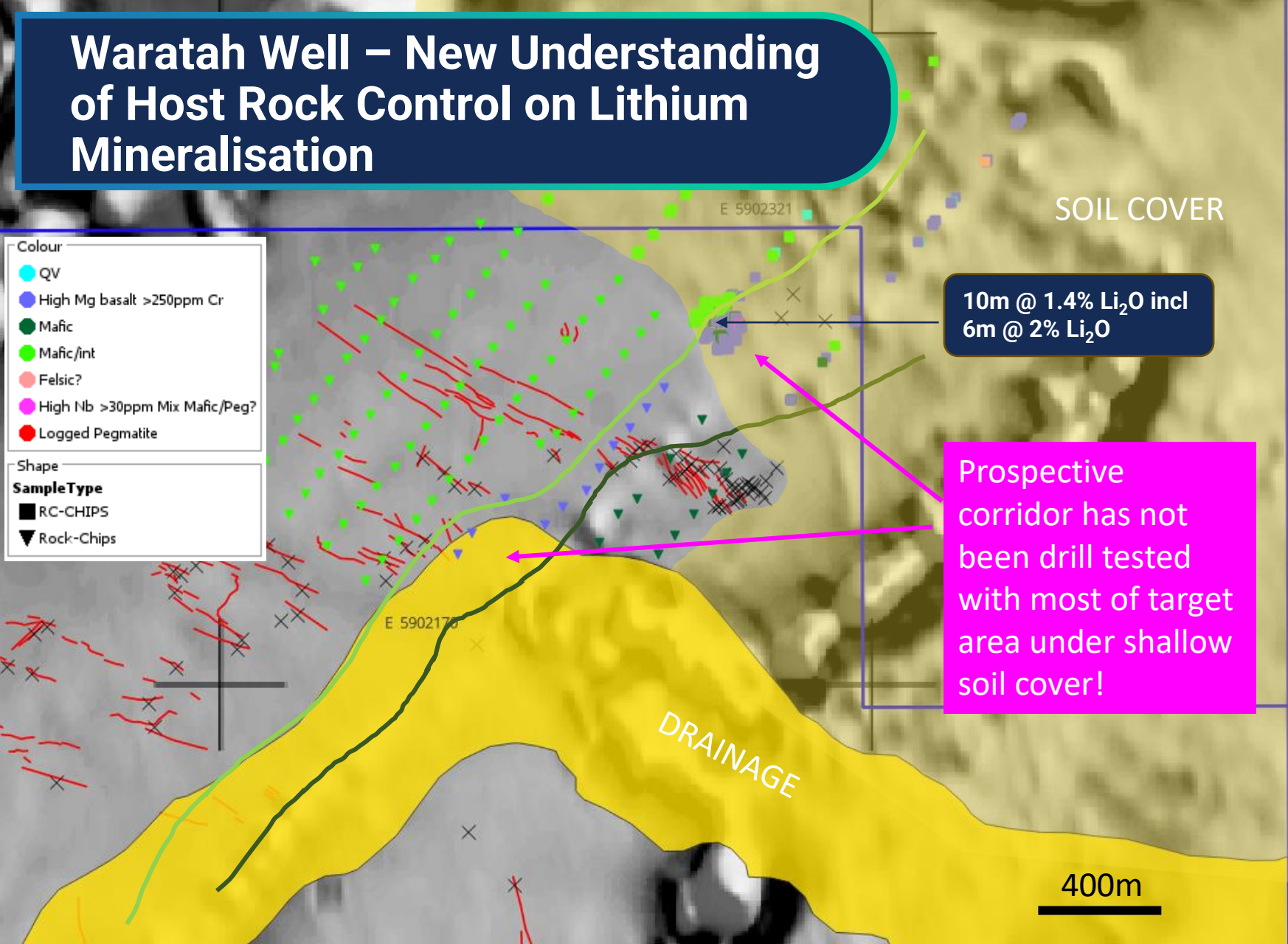
Waratah Well – High Grade Lithium Drill Results

- Step-out drilling under soil cover to the NE intersected high-grade lithium open to north, south and east under the shallow soil cover.
- Results included 10m @ 1.4% Li₂O including 6m @ 2% Li₂O¹.
- Significant follow-up RC drilling planned and budgeted. Heritage cleared & ready to drill



Notes: For full drill results refer ZNC: ASX Releases 24-Jan-23 and 6-Jul-22

Waratah Well – New Understanding of Host Rock Control on Lithium Mineralisation

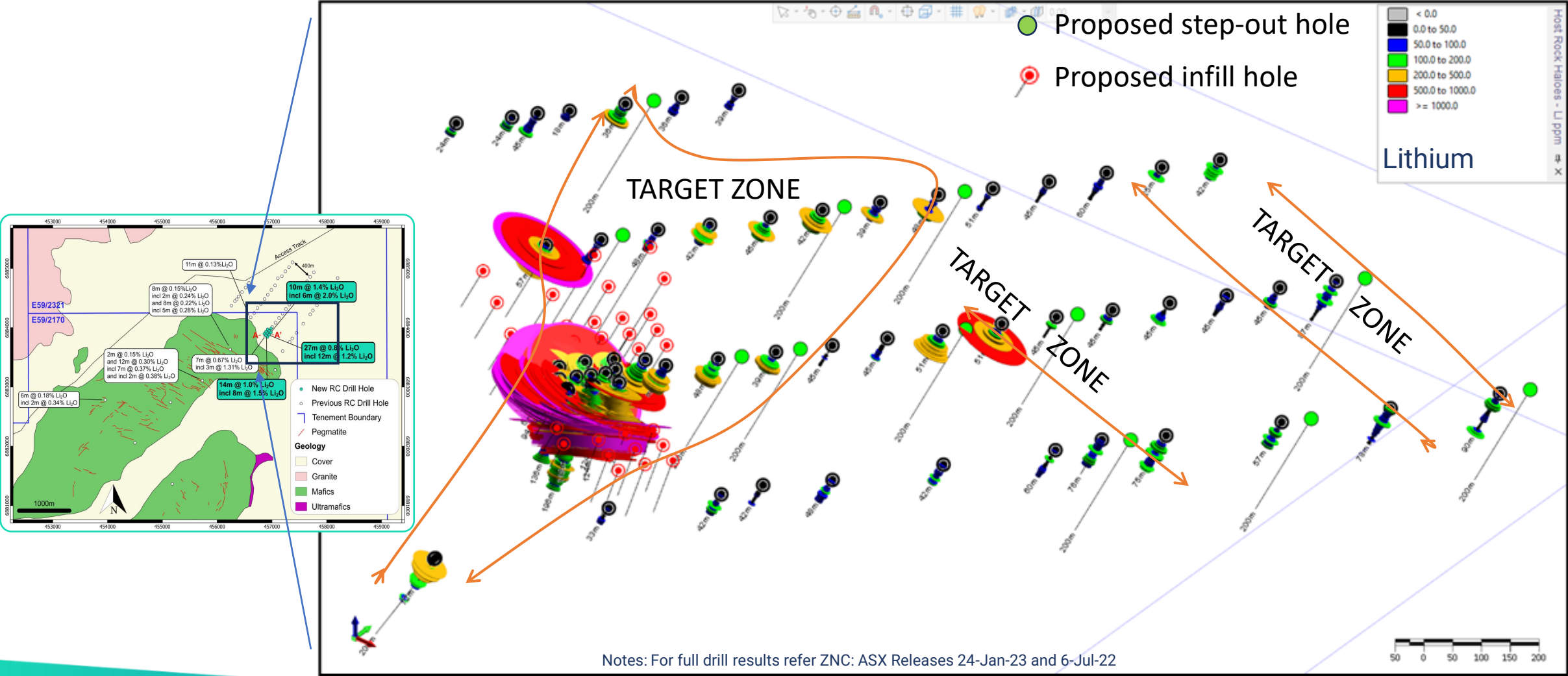


- New ZNC rock sampling has allowed chemical lithotyping of host rocks into discrete units that were not evident in hand specimens in the field.
- Shows high-grade lithium mineralisation occurs on Mafic/Int to High Mg basalt contact whilst lithium mica pegmatites (not a ZNC target) are hosted in the western Mafic/Int unit.
- Increased pegmatite density in the High Mg Basalt & Mafic Units present new target opportunity – most of target zone under shallow soil cover
- Prospective corridor untested to NE.
- Prospective corridor untested to SW under alluvium associated with small drainage.
- Further host rock sampling to be completed prior to drill testing.

Notes: For full drill results refer ZNC: ASX Release 24-Jan-23 and 6-Jul-22

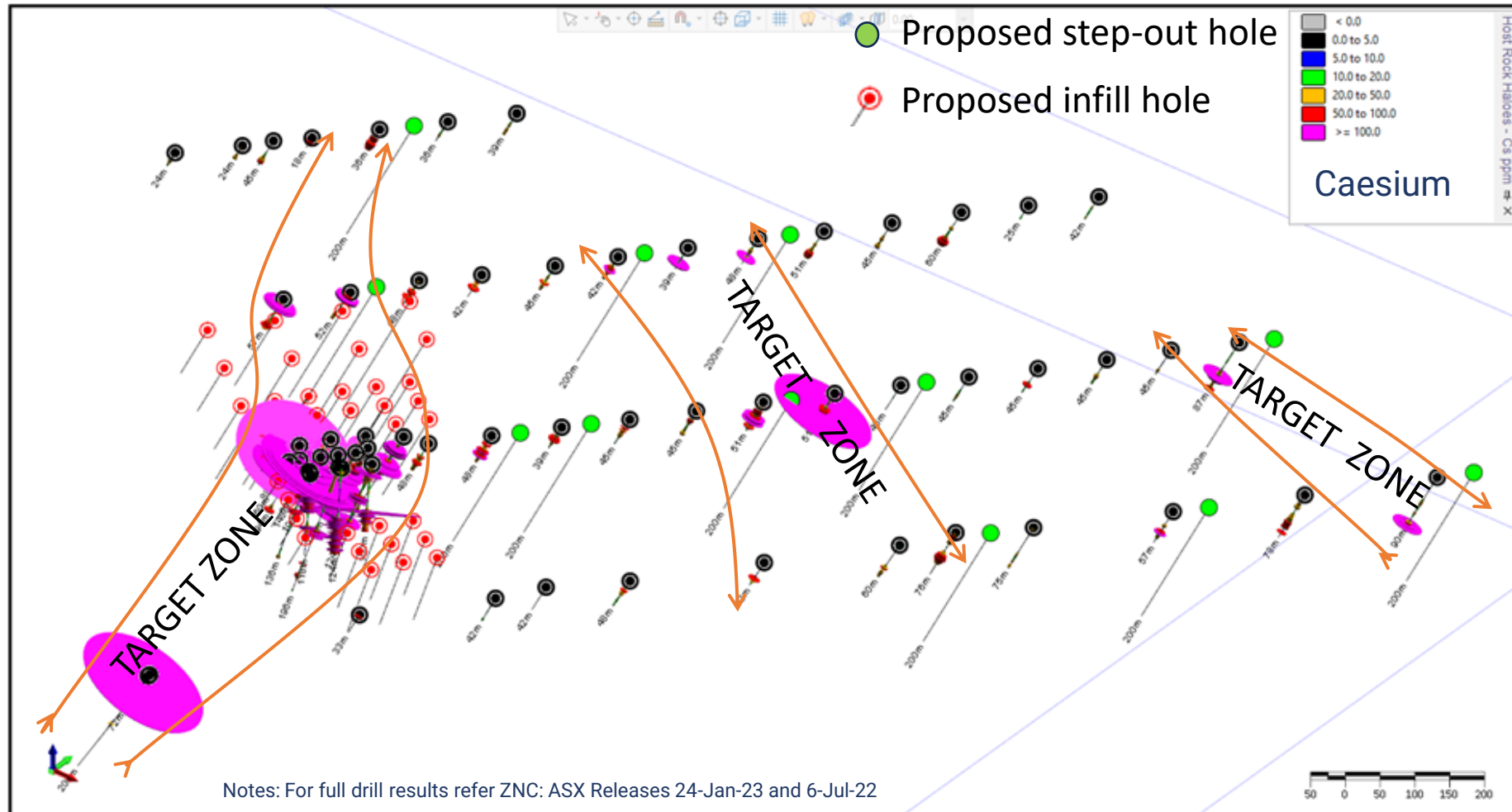
Waratah Well

- Li & Cs anomalies generated in first pass shallow RC drilling on 400m spaced lines support this new target model



Waratah Well

- Li & Cs anomalies generated in first pass shallow RC drilling on 400m spaced lines support this new target model



Supporting & Background Information



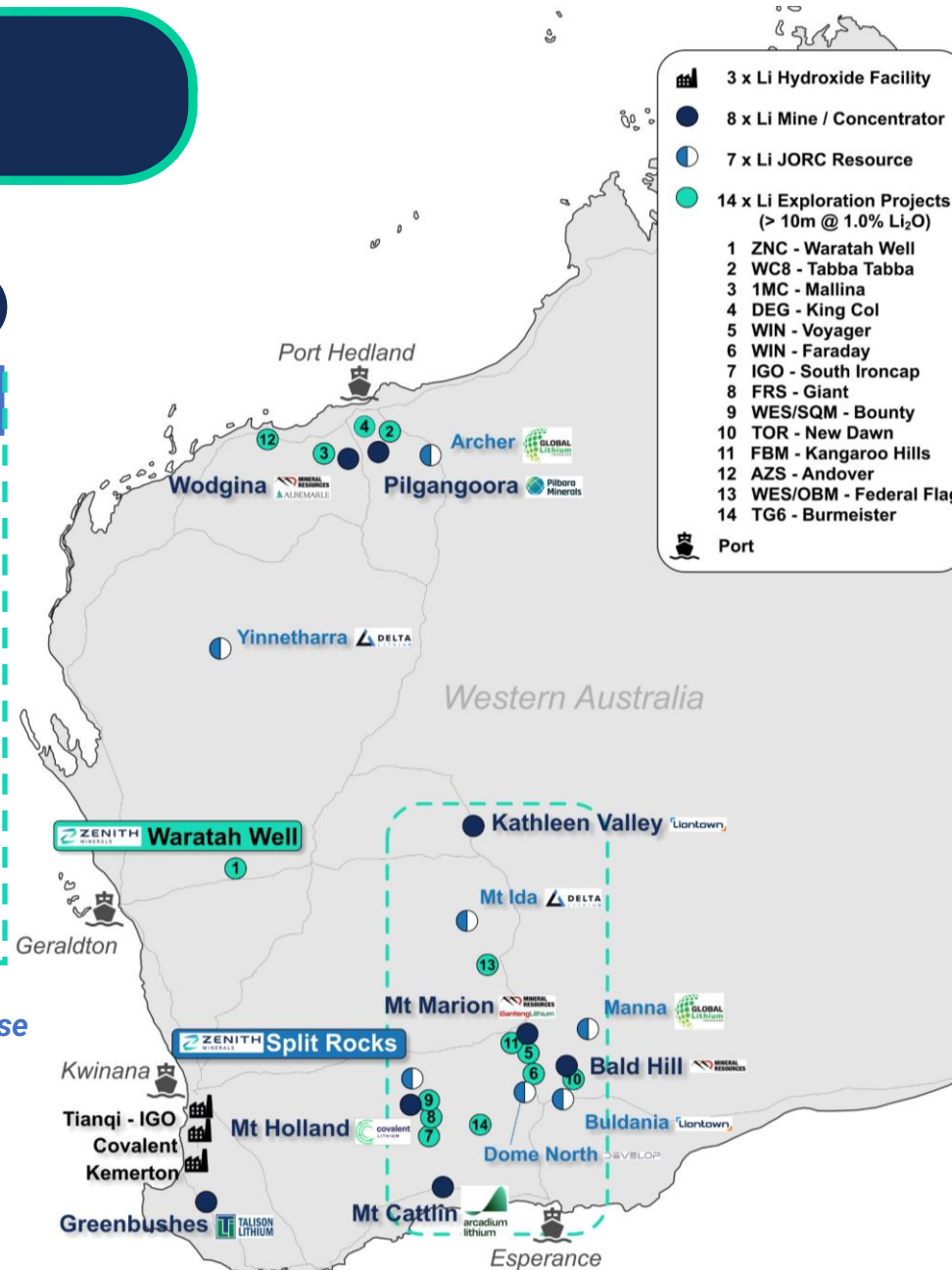
**Focused on the discovery
and advancement of battery
metal resource projects**

WA Lithium Projects

Western Australian Lithium Landscape

3	8	7	14
Lithium Hydroxide Facilities (Tianqi, Covalent and Kemerton)	Lithium Mines	JORC Resources	Advanced exploration plays
		    	

Zenith owns one of each of these



WA Lithium Exploration Projects

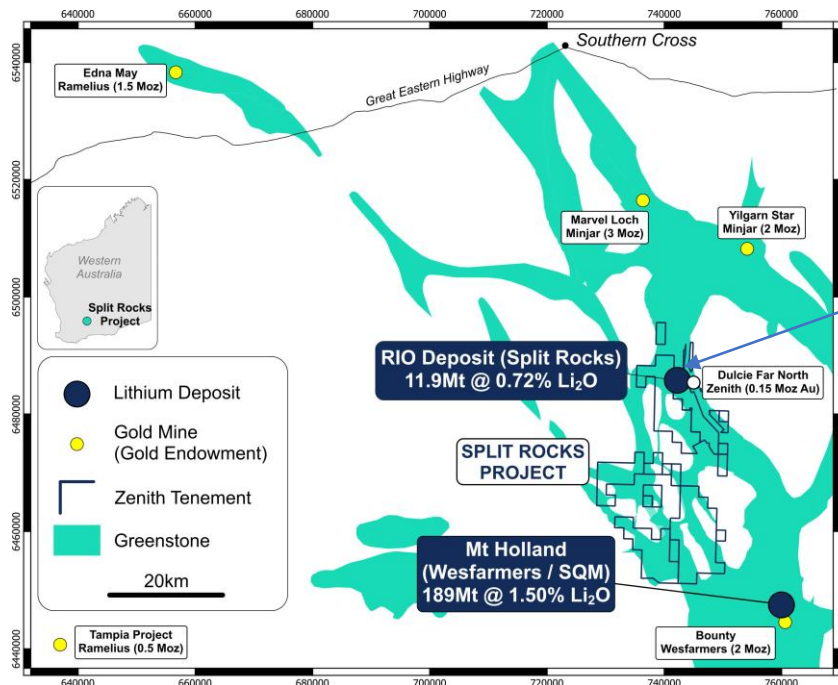
Western Australian lithium exploration projects with drill intersections >10m @ 1%Li₂O⁽¹⁾

Name	Reference	Owner
Bounty	ASX: KDR 19 December 2017	Wesfarmers Limited & SQM JV (Covalent Lithium)
South Ironcap	ASX: WSA 22 April 2016	IGO Limited
Giant	ASX: MZN 20 December 2016	Forrestania Resources Limited
Faraday	ASX: WIN 9 January 2023	Widgie Nickel Limited
Voyager	ASX: WIN 17 January 2023	Widgie Nickel Limited
Kangaroo Hills	ASX: AOU 24 November 2022	Future Battery Minerals Limited
Waratah Well	ASX: ZNC 24 January 2023	Zenith Minerals Limited
King Col	ASX: DEG 15 November 2018	DeGrey Mining Limited
Mallina	ASX: 1MC 7 December 2022	Morella Corporation Limited
New Dawn	ASX: TOR 7 December 2023	Torque Metals Limited
Andover	ASX: AZS 19 October 2022	Azure Minerals Limited
Federal Flag	ASX: OBM 26 April 2023	Ora Banda Mining Limited – Wesfarmers Limited
Tabba Tabba	ASX: WC8 12 October 2023	Wildcat Resources Limited
Burmeister	ASX: TG6 12 December 2023	TG Metals Limited

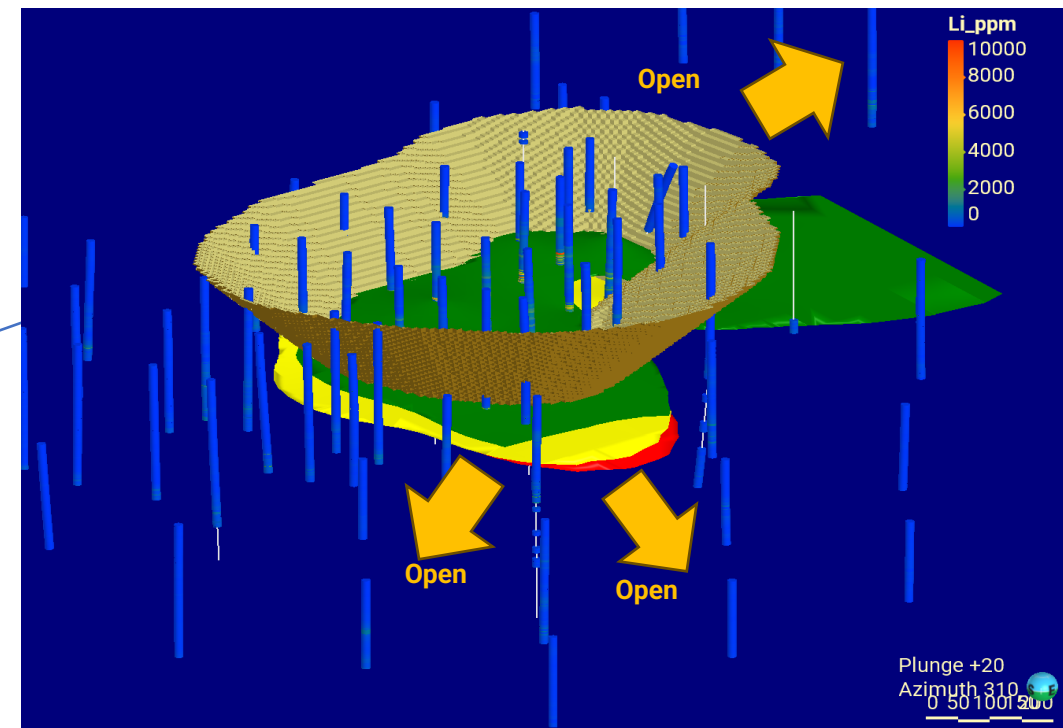
Notes: 1. Refer map on slide 22 (excludes drill intersections reported as lithium mica)

Split Rocks – Strong Blue-Sky Potential

- ✓ 2022 Program – 100 holes for 22,369m - results include¹:
 - 26m @ 1.2% Li₂O**
 - 10m @ 1.7% Li₂O**
 - 10m @ 1.0% Li₂O**
- ✓ **+\$9.4M** spend on Split Rocks & Waratah Well via previous earn-in (2022-2023)
- ✓ Rio Lithium Deposit – Inferred Mineral Resource of 11.9Mt @ 0.72% Li₂O²
- ✓ Upside with resource remaining open ended
- ✓ Infill drilling likely to increase resource grade – currently wide drill spacing
- ✓ Extensive tenement holdings (367 sq km) in the Forrestania greenstone belt north of Mt Holland lithium mine (SQM-Wesfarmers)



Note-Mt Holland Mineral Resource as reported in KDR: ASX Release 19-Mar-18



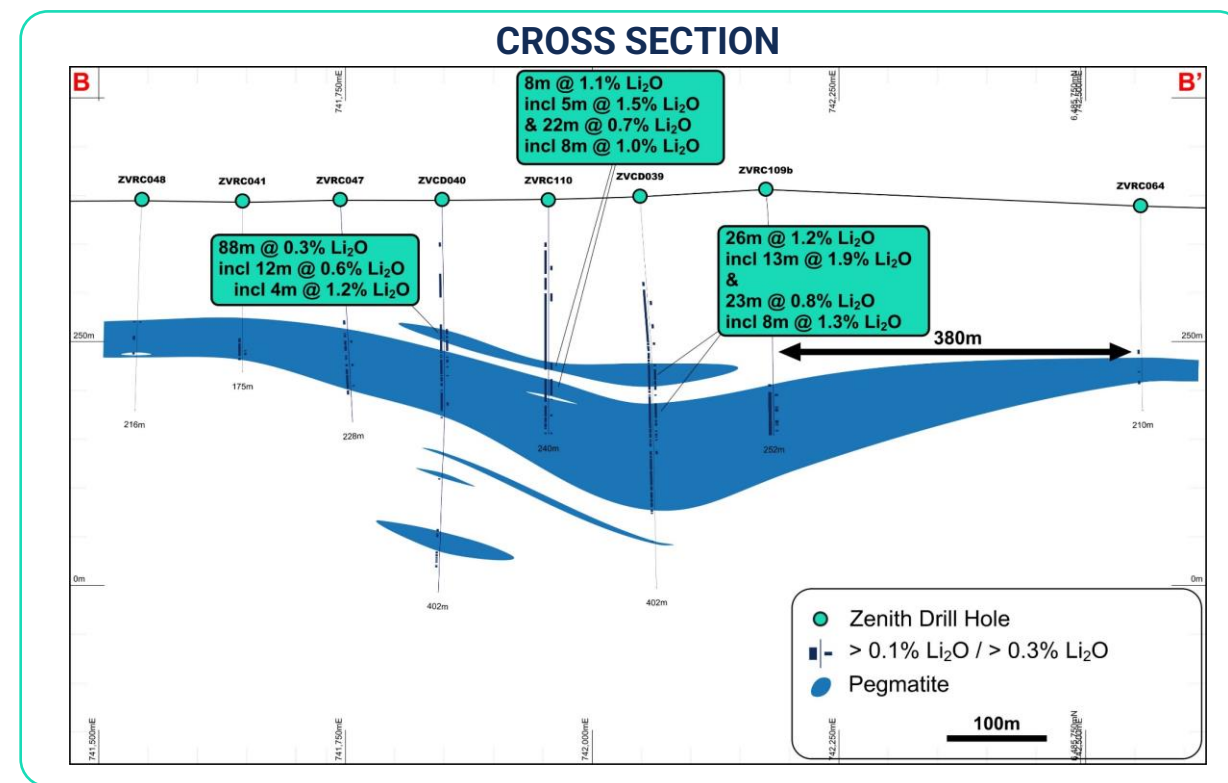
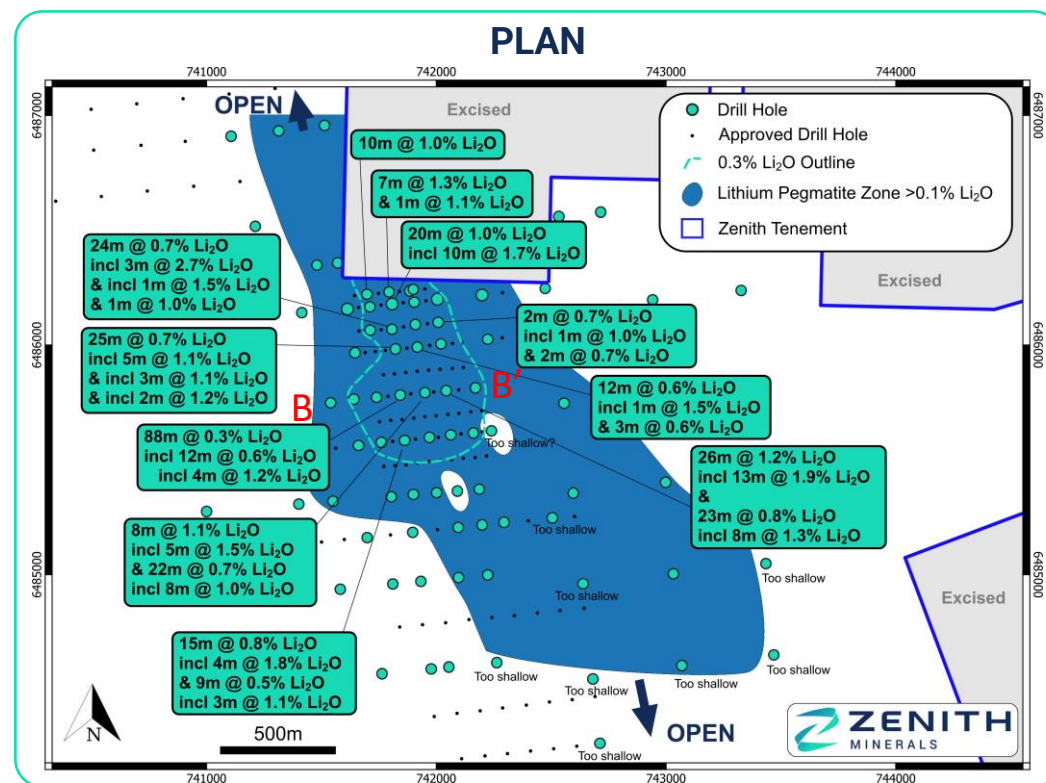
Pegmatite Inferred Mineral Resource domains and optimised pit

Notes: 1. ZNC: ASX Releases 4-Apr-22, 20-Sep-22 & 16-Nov-22
2. ZNC: ASX Release 28-Sep-23

Split Rocks – Rio Deposit

- 2022 Program – 100 holes for 22,369m
Best intersections include¹:
26m @ 1.2% Li₂O
10m @ 1.7% Li₂O
10m @ 1.0% Li₂O

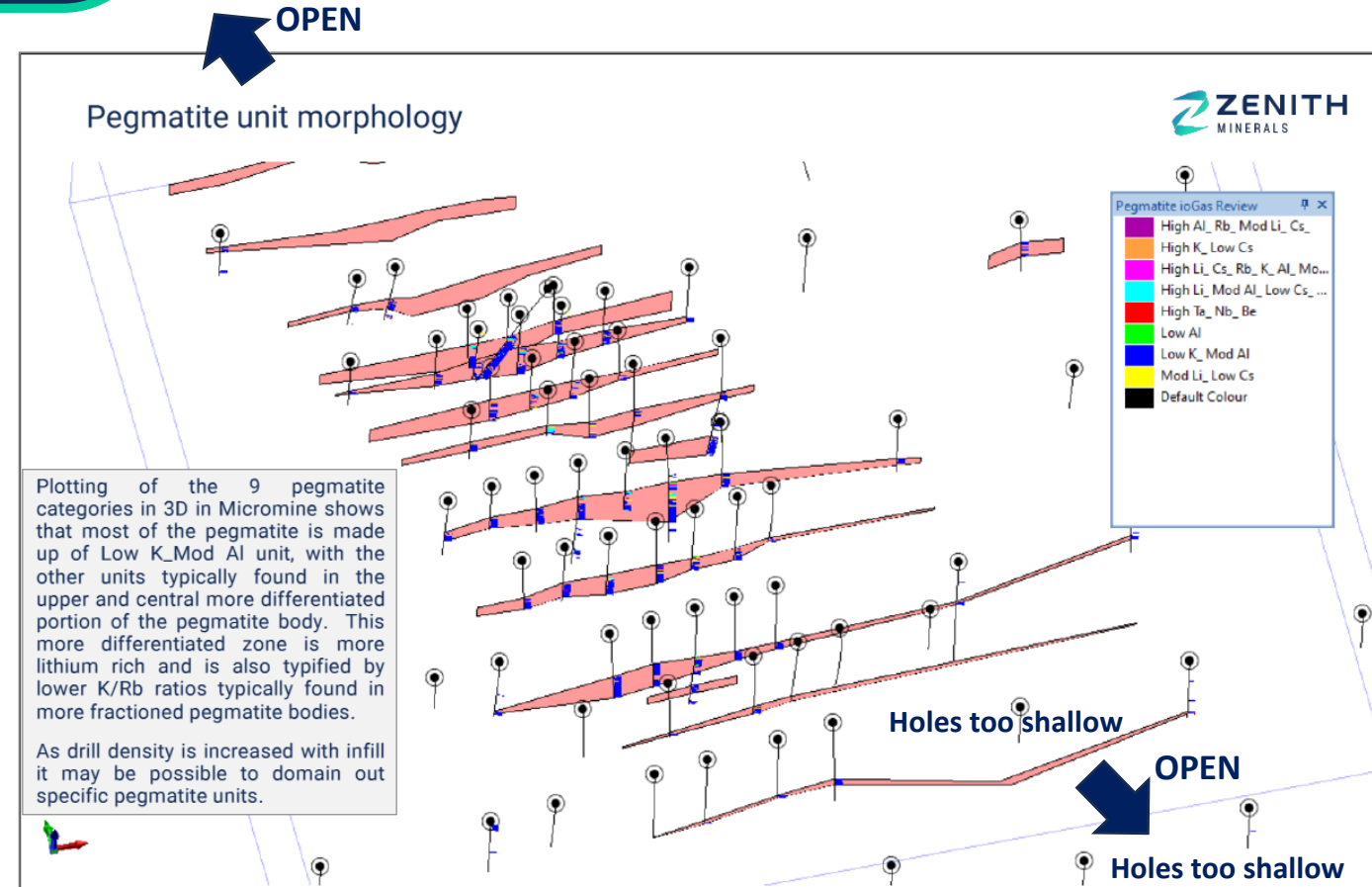
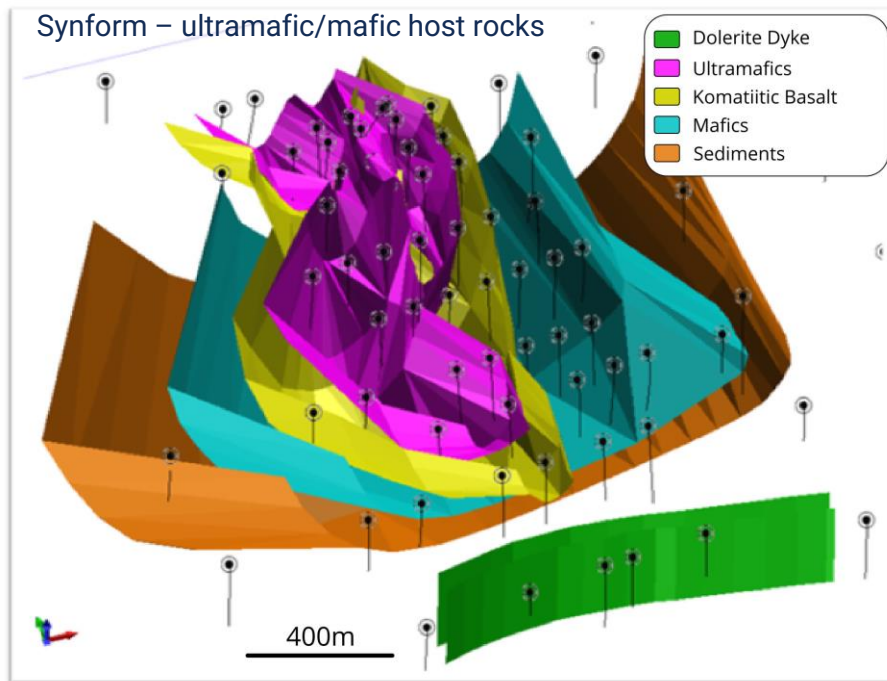
- Extensive drilling program planned to test strike extensions & geochemical targets
- Rio Lithium Mineral Resource (Sep 2023) - open along strike



Notes: 1. For full results and intersections refer ASX Release 4-Apr-22, 20-Sep-22, 16-Nov-22, 14-Feb-23 & 24-Apr-23

Split Rocks – Rio Deposit - Geology

- Flat-lying (gentle east dip & south plunging) pegmatite body – southern holes too shallow to be effective test, just clipping top of pegmatite
- Upper and lower lithium mineralised zone, lower zone poorly constrained (under drilled)
- Pegmatite open in all directions!
- Pegmatite is zoned but drill density at 200m x 100m (locally 100m x 100m) is too broad to allow domaining of those zones



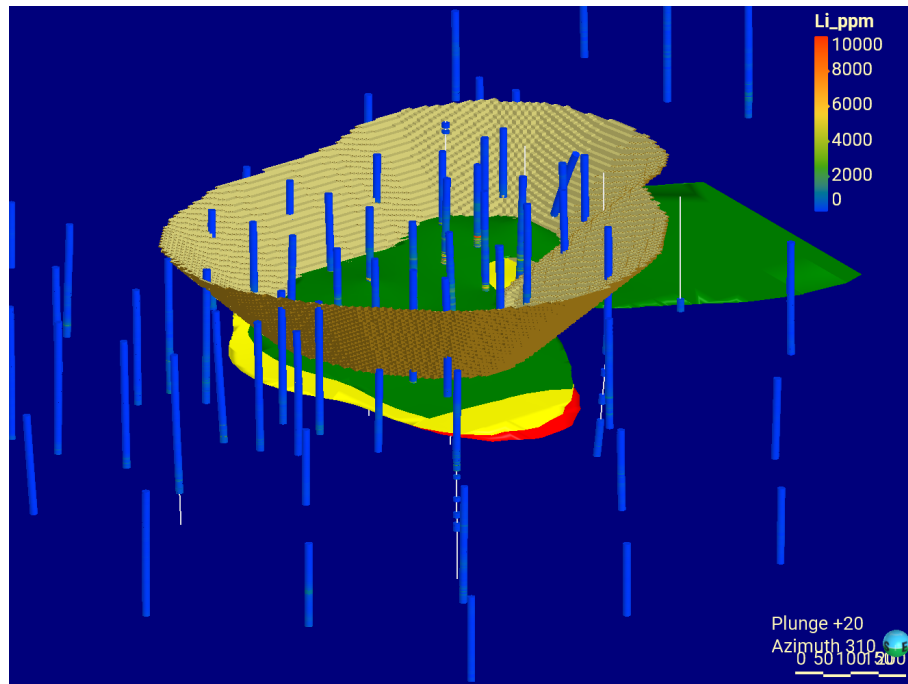
Refer ZNC: ASX Release 28-Sep-23 for background

Split Rocks – Rio Prospect

✓ Maiden Rio Mineral Resource – Sep 2023

The Mineral Resource estimate for the Split Rocks Rio project reported at a 0.5% Li₂O cutoff is shown below. The entire resource is classified Inferred and is open at depth and along strike.

Pegmatite domains and optimised pit



Rio Lithium Deposit Inferred Mineral Resource Estimate¹

Zone	Million Tonnes	Li ₂ O %	Cs ppm	Nb ppm	Sn ppm	Ta ppm	Domain
Upper	8.45	0.76	426	77	157	62	31
Middle	3.48	0.62	387	71	364	49	32
Total	11.9	0.72	415	75	217	59	-

Notes to Resource Table:

- The Mineral Resource is estimated with all drilling data available at 3rd August 2023, and reported at a 0.5% Li₂O cutoff.
- The Mineral Resource is reported in accordance with the JORC Code 2012 Edition.
- The Competent Person is Phil Jankowski FAusIMM of CSA Global
- Rounding may lead to minor apparent discrepancies

Notes: 1. ZNC ASX Release 28-Sep-23

Split Rocks – Rio Deposit - Mineralogy

	Mineral	Formula	Lithia content (pure)
Phenakite	Eucryptite	LiAlSiO_4	11.85% Li_2O (eucry)
Pyroxene	Spodumene	$\text{LiAlSi}_2\text{O}_6$	8.03% Li_2O (spod)
Feldspar	Petalite	$\text{LiAlSi}_4\text{O}_{10}$	
Mica	Lepidolite	$\text{K}(\text{Li},\text{Al})_3(\text{Si},\text{Al})_4\text{O}_{10}(\text{F},\text{OH})_2$	
	Amblygonite	$(\text{Li},\text{Na})\text{AlPO}_4(\text{F},\text{OH})$	
	Cookeite	$\text{LiAl}_4(\text{Si}_3\text{Al})\text{O}_{10}(\text{OH})_8$	

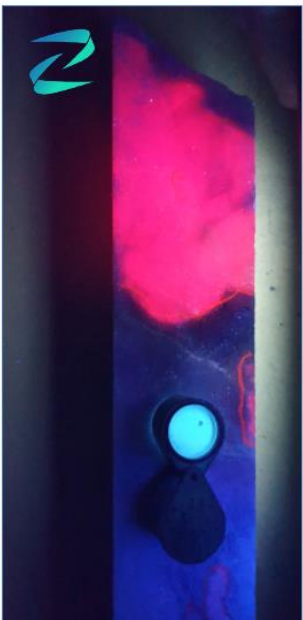


Figure 9. Rio Pegmatite –Example of Eucryptite in Drill Core ZVCD039 (approx. 190m)
Natural light (left) and fluorescing pink under ultraviolet light (right)

Eucryptite – it looks like quartz!

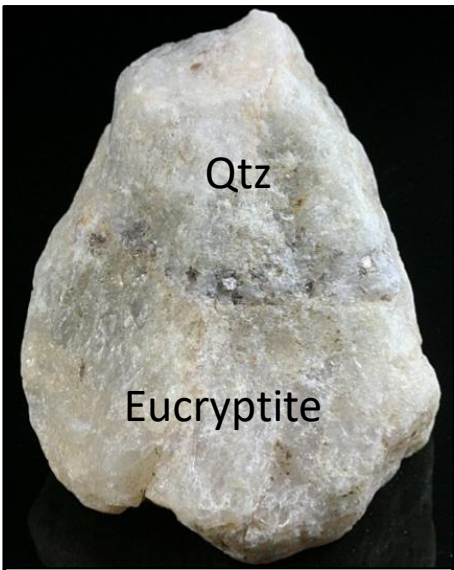
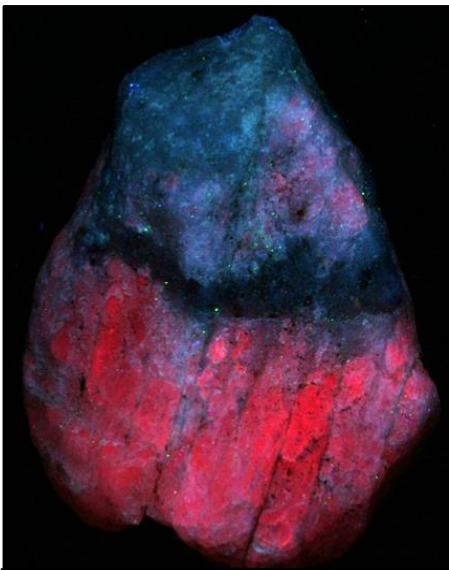


Image depicting the undistinguishable nature of quartz (upper) vs Eucryptite (lower) from the Bikita Pegmatite, Zimbabwe.



Short wavelength UV response of the Eucryptite + Quartz hand specimen from Bikita. (www.mindat.org)

Rio Lithium Deposit –eucryptite crystals in drill core (red pencil outlines drawn under UV light)



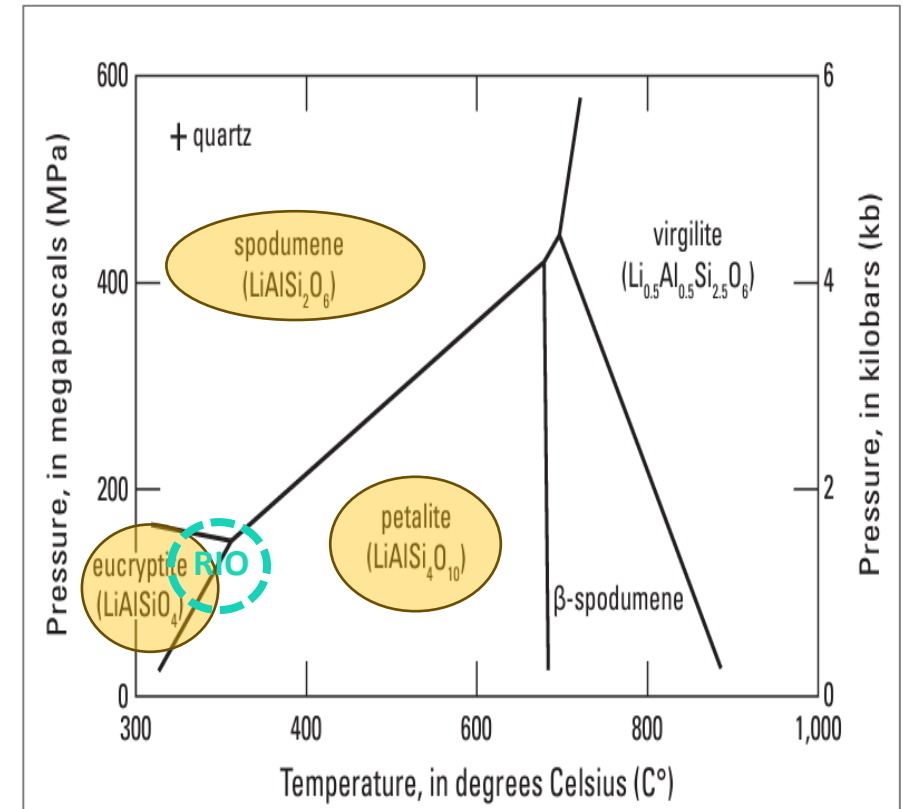
Split Rocks – Rio Deposit - Mineralogy

Sweetapple 2022 study for Zenith – RAMAN, XRD, SEM EDS, PETROLOGY & MINERALOGY, UV – Eucryptite, Spodumene & Petalite

“The form of crystallization of eucryptite as either monomineralic cuttings, and either adjoining quartz or with subhedral-euhedral quartz inclusions, is suggested to indicate that eucryptite is part of a primary mineral pegmatitic mineral assemblage and has not been formed from the hydrothermal alteration or replacement of other lithium silicates. Eucryptite is interpreted to form relatively pure discrete bodies or units within the pegmatite, and is thus favourable for selective mining and processing”

1. Temperature and pressure controls lithium mineralogy
2. Temperature and pressure are a function of metamorphic grade at the time of the lithium mineral formation
3. ZNC Split Rocks tenure (45km x 20km) is very large and contains significant variations in metamorphic grades throughout (therefore variations in temperature & pressure)
4. The inference is that the Zenith tenure is prospective for spodumene deposits

Minimal variation of metamorphic conditions at Rio Deposit to form spodumene (an increase in pressure)



Lithium silicate phase diagram under conditions of quartz saturation from London (1992)

London, D., 1992, The application of experimental petrology to the genesis and crystallization of granitic pegmatites: Canadian Mineralogist, v. 30, p. 499–540.



AUSTRALIAN-BASED MINERALS EXPLORER FOR THE PRODUCTS OF TOMORROW

Zenith Minerals Limited (ASX:ZNC)

www.zenithminerals.com.au

