

# ASX announcement

23 March 2023

## Lithium drilling underway at Higginsville

Argonaut Resources NL (ASX: ARE) (*Argonaut* or the *Company*) is pleased to advise that a drilling program targeting lithium, caesium, tantalum (LCT) pegmatites has commenced at the Darson prospect within its 80% held Higginsville project in Western Australia.

### Highlights

#### Drilling program

- Argonaut has commenced a 3,000m reverse circulation (RC) drilling program targeting LCT pegmatites at the Darson prospect near Higginsville.
- Initial drilling is targeting a major geochemical anomaly with accompanying outcropping pegmatites at Darson South (Figure 2).

#### Sampling program

- A field crew has completed an additional 534 infill and regional soil samples to better define existing targets and identify new drilling targets.
- All soil sample have now been submitted to the laboratory for analysis.

#### Prime geological setting for discovery

- The Darson pegmatite swarm is located within the Tier 1, world class Norseman – Coolgardie LCT Pegmatite Corridor (Figure 1).
- This is a prime geological setting for the discovery of a commercial lithium deposit and is located within:
  - four kilometres of the Dome North lithium deposits held by Essential Metals, and
  - 12 kilometres of the Sinclair caesium mine (see Figure 1).
  - Regionally, the Darson pegmatite swarm is located at the centre of a cluster of major lithium Resources (See Figure 1), including:
    - » Bald Hill (Alliance),
    - » Mount Marion (Mineral Resources),
    - » Buldania (Liontown Resources), and
    - » Dome North (Essential Metals).

#### Higginsville Project

- Argonaut holds an 80% interest in exploration licence E15/1489 which hosts:
  - the Darson Pegmatite Swarm;
  - the Amorphous gold deposit; and
  - the Footes Find gold prospect.

# Lithium Exploration – Darson Pegmatite Swarm

## Drilling program

Argonaut has commenced an RC drilling program targeting LCT pegmatites at the Darson prospect near Higginsville, Western Australia. The RC drilling program will comprise approximately 3,000m of drilling.

The program is expected to be completed in three weeks.

## Soil sampling

A soil sampling program was completed over the Darson pegmatite swarm during the September and October 2022. 278 soil samples sieved to #40 mesh plus QA/QC samples were collected from in-situ (residual) soil profiles.

This sampling program recommenced in early March 2023. To date, an additional 534 soil samples have been taken and submitted for laboratory analysis. Samples submitted for analysis during March 2023 will provide further information for the targeting of potential drill holes at Darson Central.



**Photo 1** Reverse circulation drilling at Darson South – March 2023.



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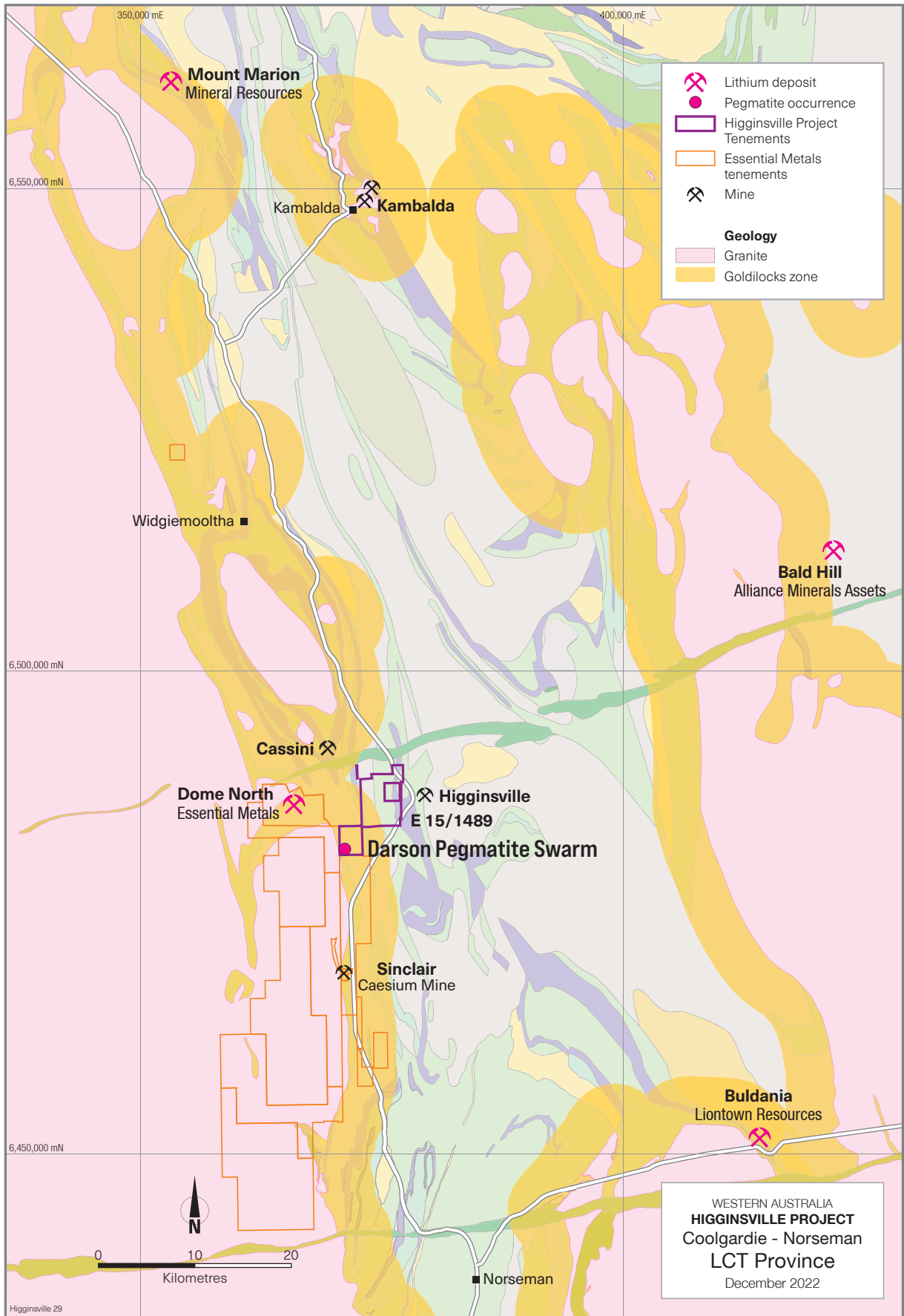
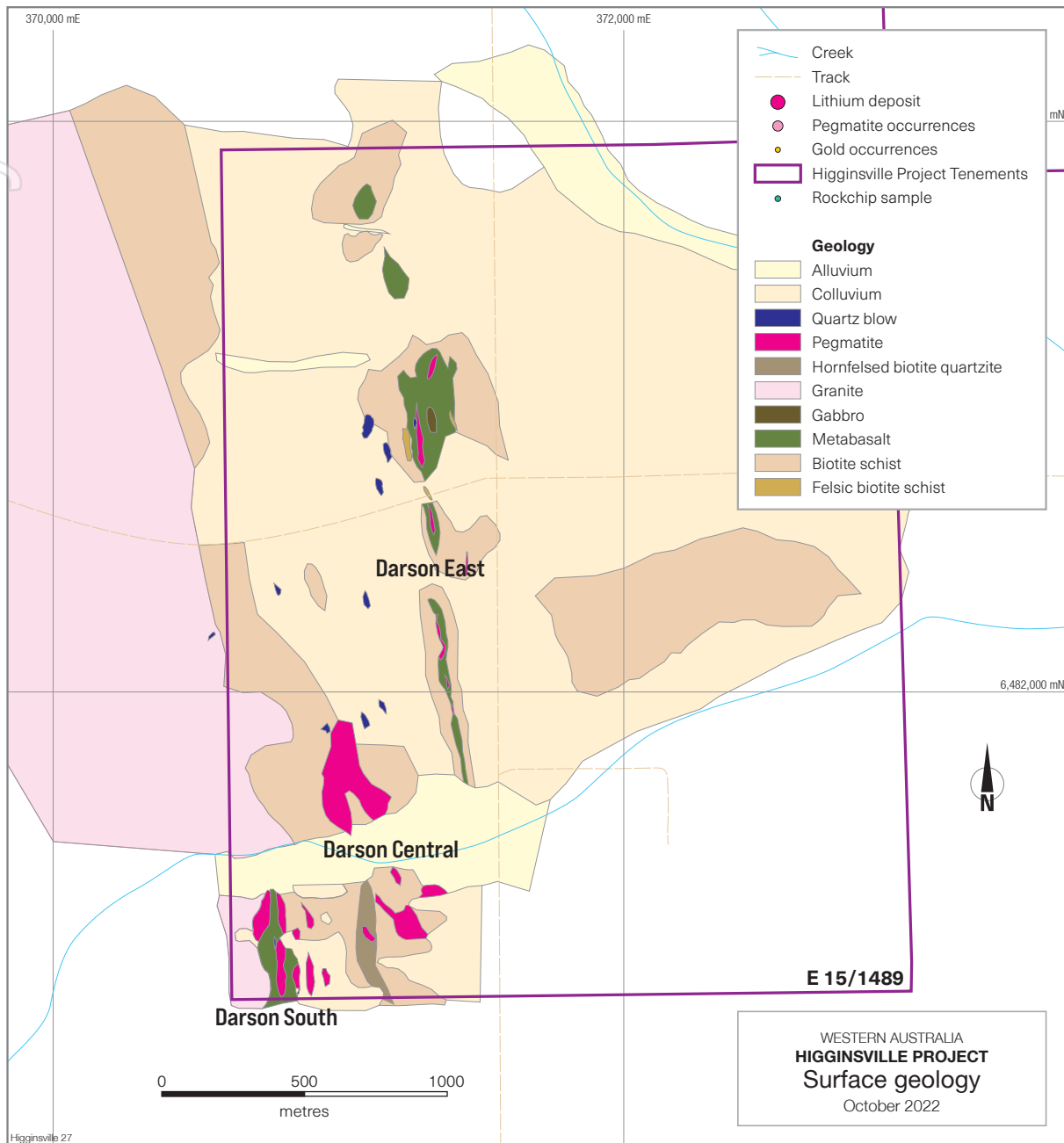


Figure 1 Coolgardie-Norseman LCT Province showing major lithium deposits and the “Goldilocks Zone” in relation to the Darson Pegmatite Swarm, Higginsville, WA. After Brand et al 2021.



**Figure 2** The Darson Pegmatite Swarm is located radially outwards from the Pioneer Granite.

## Geochemical results and prospectivity index

Argonaut commissioned geochemist Dr Nigel Brand<sup>1</sup>, a recognised expert in Western Australian LCT pegmatite geochemistry, to analyse the results of recent field work at Darson. Dr Brand concluded:

- A combination of LCT elements and host lithic elements combined to generate a Prospectivity Index has identified areas of probable LCT mineralisation within five parallel trends.
- Modelling of the soil data indicate that the Li, Be and Cs represent the highly fractionated portion (Zone 4 and Zone 5) of the LCT pegmatite whilst Nb and Ta are proximal (Zone 3 and Zone 4) based on Cerny 1991 diagram<sup>2</sup>.
- Rock chip classification indicates “fertile granites” along two trends and potentially represents the outer shell of a fractionated pegmatite.

<sup>1</sup> Dr Brand holds Argonaut shares directly and indirectly.

<sup>2</sup> Cerny 1991b, Figure 2(b) [https://www.researchgate.net/figure/Regional-zoning-in-fertile-granites-and-pegmatites-Cerny-1991b-a-Regional-zonation-of\\_fig2\\_42797128](https://www.researchgate.net/figure/Regional-zoning-in-fertile-granites-and-pegmatites-Cerny-1991b-a-Regional-zonation-of_fig2_42797128).

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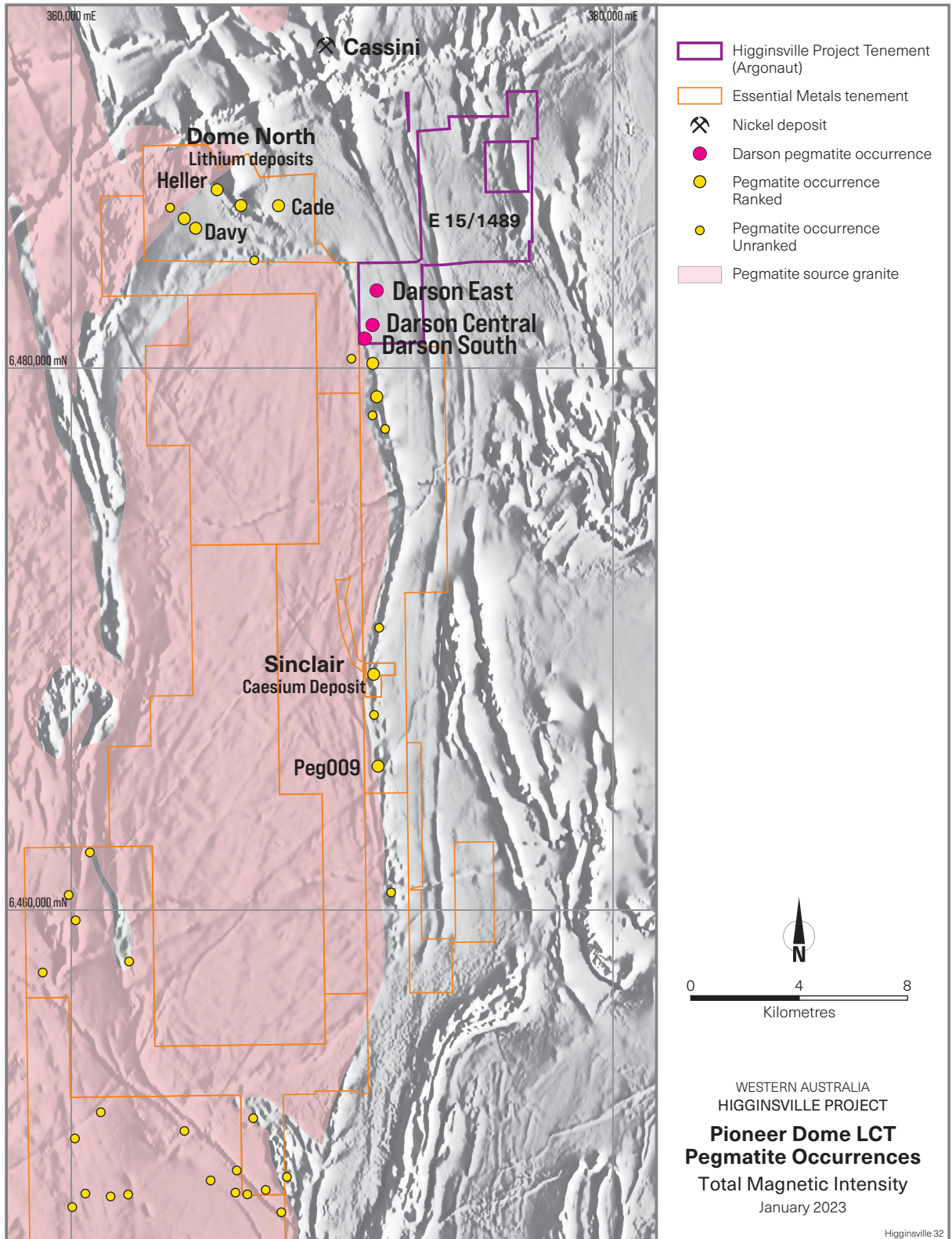


Figure 3 Pioneer Dome LCT pegmatite occurrences and source granites over greyscale magnetic image.

The recommendations that resulted from Dr Brand's analysis are:

- Further systematic regional soil sampling to identify any near surface potential pegmatite trends.
- Drill testing of the defined area of interest [Darson South] and trends [Darson Central and Darson North] should be considered as a high priority.

Nigel Brand is the co-author of several papers regarding LCT pegmatite exploration and discovery in the area of the Pioneer Dome. Dr Brand has worked extensively in the area with several explorers as a consulting geochemist.

## Numerous LCT pegmatites up to 150m wide

Fieldwork undertaken by Argonaut during February 2022 and September/October 2022 defined an extensive swarm of LCT pegmatites up to 150m in width extending over an aggregate strike length of over two kilometres (Figure 2 and Figure 3).

The pegmatites are located near the margin of the Pioneer Granite. The Pioneer Granite caused the emplacement of LCT pegmatites at the Dome North lithium deposit and at Sinclair, which was previously mined for Caesium (Figure 1).

## Mapping

Following the success of initial scouting traverses over the Darson area of E15/1489 in February 2022, detailed mapping was undertaken during September and October 2022 in conjunction with a soil sampling program.

This geological mapping identified several previously unrecorded LCT pegmatite occurrences including a particularly large pegmatite measuring ~400m in strike length and ~150m in width at Darson Central (Figure 3). The mapping program delineated three distinct types of pegmatite (Figure 3):

1. Darson South: pegmatites occurring on a linear magnetic anomaly, either on or nearby to the margin of the Pioneer Granite.
2. Darson Central: wide, potentially voluminous pegmatites which occur 300 to 600m from the granite margin and are covered by alluvium on the central portion.
3. Darson East: medium to fine grained pegmatites occurring within a meta-basalt approximately 800m from the granite margin.

## Joint Venture Agreement

The Higginsville project is governed by a joint venture agreement between Argonaut and Loded Dog Prospecting Pty Ltd titled "Eastern Goldfields New Joint Venture and Royalty Agreement". This JVA relates to exploration licence E15/1489. Argonaut holds an 80% interest and will sole fund joint venture activities through until completion of a bankable feasibility study and a decision to mine is made.

## About Argonaut

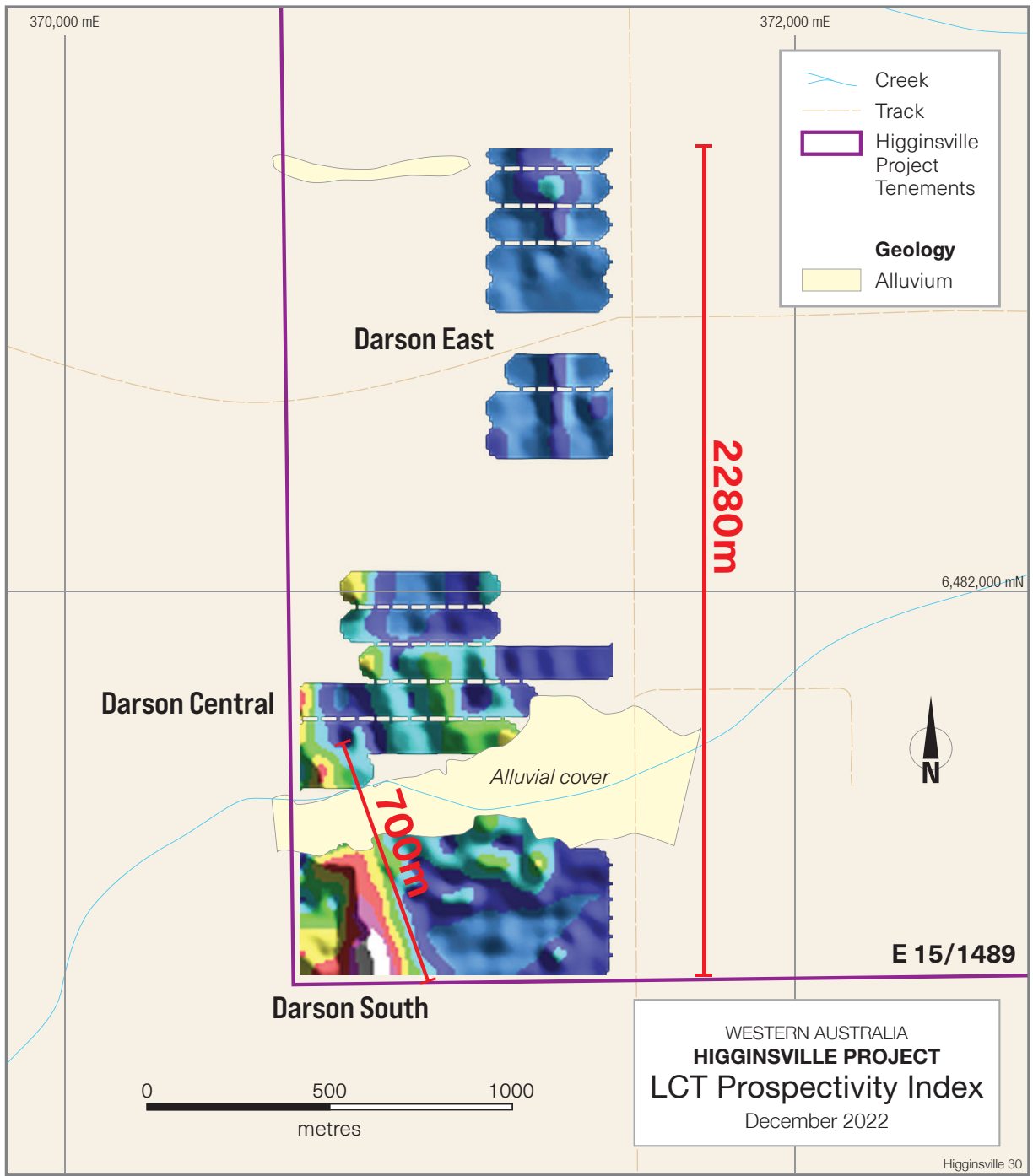
Argonaut Resources NL is an Australian Securities Exchange listed exploration and development company focused on the Higginsville lithium project in Western Australia, Murdie copper project in South Australia, and copper exploration in North-western Zambia.

*This report was authorised for release by the Board of Argonaut Resources NL*

**Lindsay Owler**  
Director and CEO

Argonaut Resources NL





**Figure 4** Soil sampling LCT Prospectivity Index grid showing highly prospective, 700m long LCT pegmatite zone at Darson South, moderate anomalism at Darson Central and a linear prospectivity anomaly over Darson East.

**About Dr. Nigel Brand**

*Nigel worked for WMC Resources for eleven years until 1999. During his time at WMC he worked throughout the Norseman-Wiluna Greenstone belt on various regional Ni & Au exploitation programs and at WMC operations at Norseman, Kambalda, Kalgoorlie, Leinster and Mt Keith.*

*He completed his PhD in 1997 on weathering process associated with nickel sulphides.*

*On leaving WMC, Nigel joined Anglo American for four and a half years as their geochemist in the Asian-Pacific region, including India, Philippines and Australia exploring for Zn, Ni and Cu-Au PC/IOCG deposits. In 2004, Nigel and Dr David Lawie co-founded ioGeochemistry, a global independent geochemical consulting group based in Perth, Western Australia.*

*In January 2005 Nigel established an independent geochemical consulting Geochemical Services Pty Ltd to provide hands-on and applied geochemical expertise to international mineral exploration.*