

Argonaut Resources NL  
(Approval received to be re-named)



**ORPHEUS**  
URANIUM LTD

**Annual General Meeting**  
**28 November 2023**

Argonaut Resources NL ABN: 97 008 084 848

[www.argonautresources.com](http://www.argonautresources.com) | ASX: ARE

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## Argonaut Resources NL (Approval received to be re-named)



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### **Competent Person Statement**

Sections of information contained in this presentation that relate to Exploration Results were compiled or reviewed by Miss Bethany Lawrence BScAppGeol(Hons),MAIG,GIA(Aff),CG(Aff) who is a Member of the Australian Institute of Geoscientists and is a full-time employee of Argonaut Resources NL. Miss Lawrence holds shares in Orpheus Uranium Limited. Miss Lawrence has sufficient experience which is relevant to the style of mineral deposits under consideration and to the activity which she is undertaking to qualify as a Competent Person as defined in the 2012 edition of the "Australasian Code for Reporting of Mineral Resources and Ore Reserves". Miss Lawrence consents to the inclusion in this presentation of the matters based on this information in the form and context in which it appears.

## Multiple drilling opportunities for 2024

- Frome Project (SA)
- Mundaerno Project (SA)
- Radium Hill South Project (SA)
- Mount Douglas Project (NT)

All uranium projects 100% owned by Orpheus

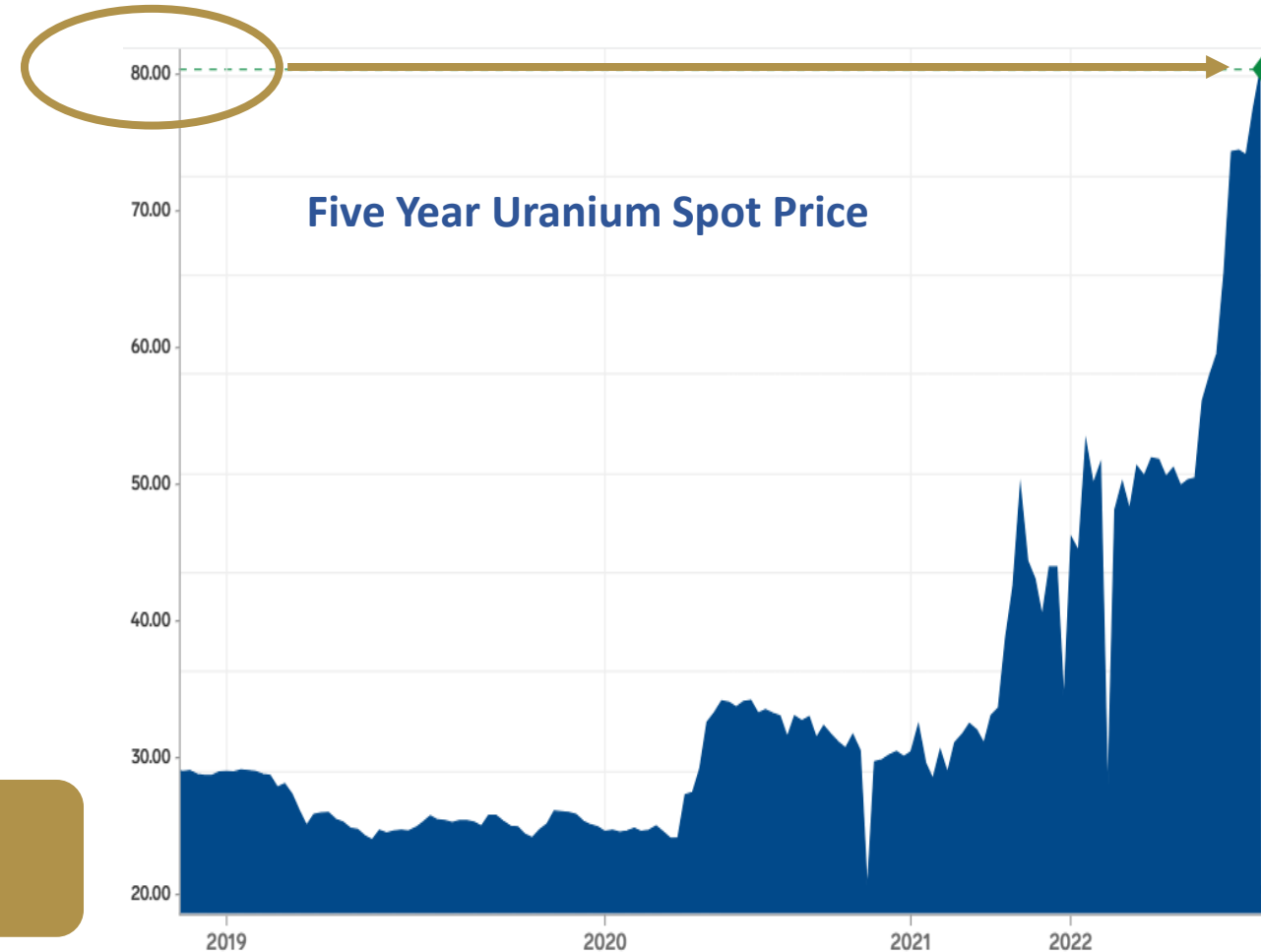
Each project hosts known uranium mineralisation from prior exploration programs, providing confidence in exploration success

All projects are located in South Australia and Northern Territory where uranium mining and processing is permitted

Uranium spot price is at 15-year highs with positive momentum

Uranium demand growth estimated @ 27% for 2021-2030 and 38% for 2031-2040<sup>1</sup>

Located in world-class uranium exploration regions adjacent to operating and historic uranium mines



[www.markets.businessinsider.com/commodities/uranium-price](http://www.markets.businessinsider.com/commodities/uranium-price)

<sup>1</sup>[www.world-nuclear.org/information-library/nuclear-fuel-cycle/uranium-resources/uranium-markets](http://www.world-nuclear.org/information-library/nuclear-fuel-cycle/uranium-resources/uranium-markets)

- **Frome Project (Frome Embayment)** in South Australia, located in the Frome Embayment which is a globally significant location in terms of discovered economic sandstone hosted uranium deposits
- **Mundaerno Project (Curnamona Province)** in South Australia, located ~12km south of the Honeymoon Uranium Mine and hosts a portion of the headwaters of the Yarramba Palaeochannel
- **Radium Hill South Project (Murray-Darling Basin)** in South Australia, located in the northern margin of the Murray-Darling Basin, ~20 km south of the Radium Hill Uranium Field and hosts five uranium occurrences
- **Marree Project (Eromanga Basin)** in South Australia, located in the southern Eromanga Basin, prospective for silcrete-hosted uranium in Tertiary and Cretaceous sediments
- **Cummins Project (Eyre Peninsula)** in South Australia, where the Company is targeting structurally controlled or paleochannel hosted sedimentary uranium
- **Mount Douglas Project (Rum Jungle)** in the Northern Territory, which has strong geological parallels with the famous uranium rich Alligator Rivers region, but which has been significantly under-explored in comparison



The Frome Project, Mundaerno Project and Radium Hill South Project are considered flagship projects for Orpheus, based on factors, such as highly radiogenic granite source rocks, well developed palaeochannels, regional structures, Tertiary host rocks of the Eyre Formation and Namba Formation or equivalent Renmark Group and suitable land access considerations for an ISL operation



## Why South Australia?

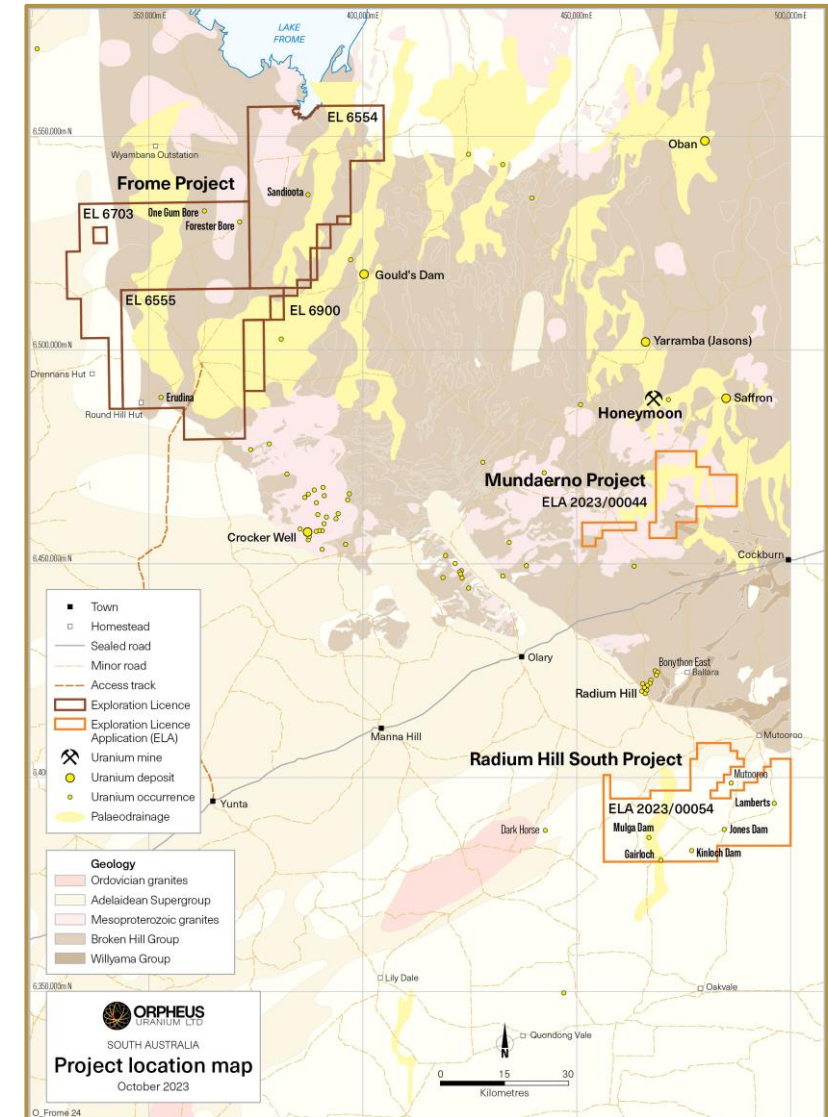
- ✓ Sandstone hosted uranium deposits in South Australia have a clear, well-established, regulatory pathway for uranium ISR development

## Why Sandstone Hosted Uranium?

- ✓ Sandstone hosted uranium deposits contain some of the largest resources of uranium worldwide - Australia, China, Kazakhstan, Niger and United States

## Why Frome Embayment?

- ✓ Frome Embayment sparsely explored, despite hosting significant uranium mines and deposits including Beverley, Four Mile and Honeymoon Uranium Mines and Goulds Dam deposit, as well as other uranium occurrences
- ✓ Orpheus leveraging on work of previous explorers who halted exploration due to market conditions from 2011



## **FROME PROJECT (SA)**

**Sandstone Hosted (Basal channel, tabular, roll-front, structural)**

# Frome Project (Frome Embayment, SA)

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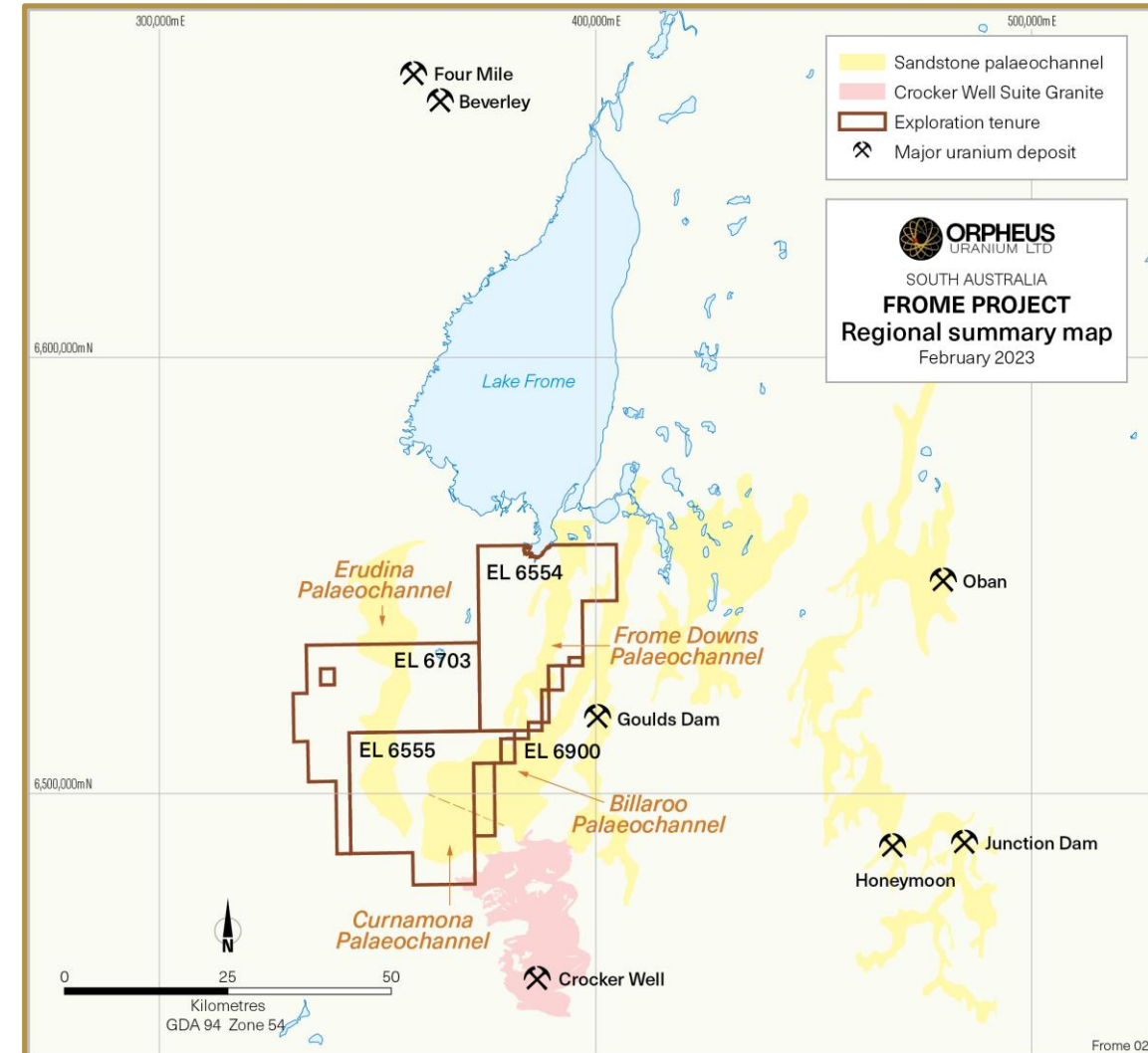
## The Frome Project is:

- Located ~12 km west of the **Goulds Dam Uranium Deposit**
- Contains a significant footprint of prospective palaeochannels: **Erudina, Curnamona, Frome Downs, Billeroo**
- Hosts four known uranium occurrences: **Erudina, Forester Bore, One Gum Bore, Billeroo**
- Historic exploration conducted in 1970's and between 2004 to 2014 (Areva Australia Pty Ltd) intersecting **uranium grades including 1,500 ppm Eq U at the Erudina prospect, defining a large mineralised system over 12 km strike length**

## Exploration Program 2024

1. Passive seismic and geophysical reprocessing of existing datasets (AEM and ground gravity) (Nov/Dec 2023)
2. Stakeholder engagement and clearance surveys (Feb 2024)
3. Drill testing of targets, Erudina and west of Goulds Dam (~April 2024)

**Drilling at Erudina prospect planned ~April 2024**





## **MUNDAERNO PROJECT (SA)**

**Sandstone Hosted (Roll-front, structural)**



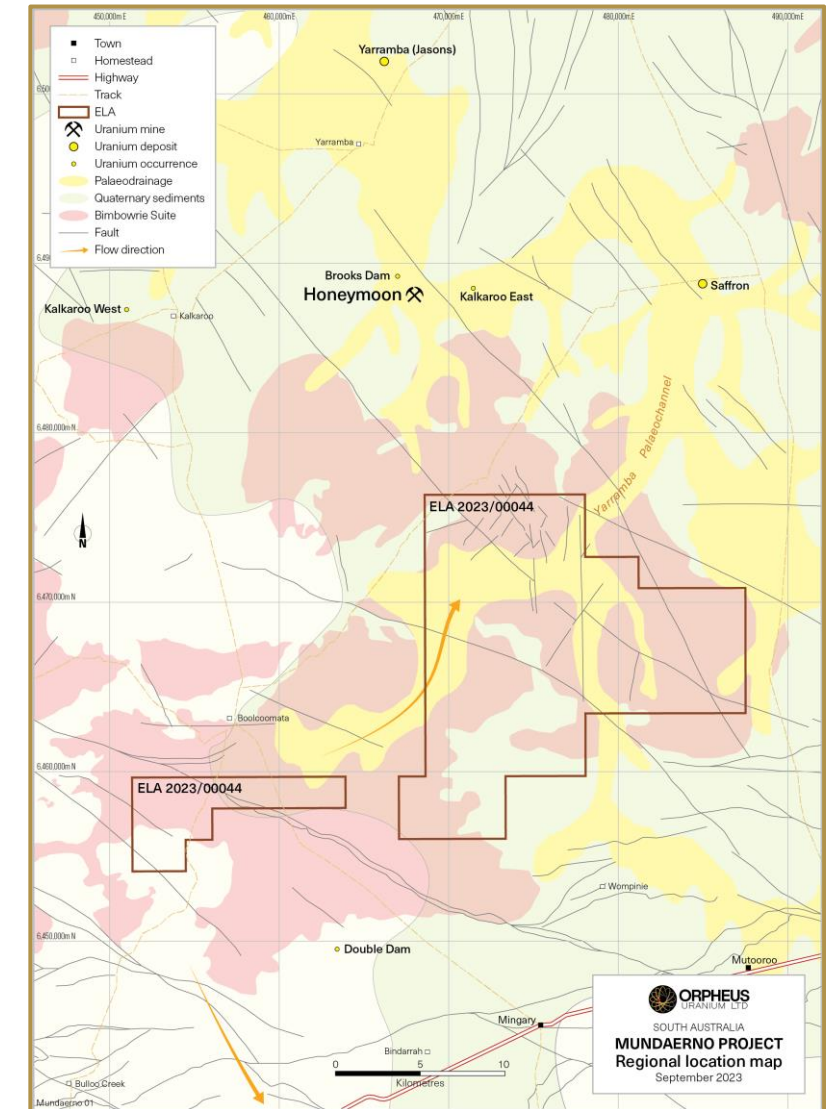
## The Mundaerno Project is:

- Located ~12 km south of the **Honeymoon Uranium Mine**
- Hosts a portion of the headwaters of the **Yarramba Palaeochannel**
  - The Yarramba Palaeochannel, hosts the Honeymoon Uranium Mine (36 Mlbs contained  $U_3O_8$ ), Yarramba (Jasons) deposit (11 Mlbs contained  $U_3O_8$ ), and the Saffron deposit (5.4 Mlbs contained  $U_3O_8$ )
- **Limited historic exploration** conducted in 1970's and again 2011 (Capital Mining) where only 14 of the originally intended 76 holes were completed
- Drilling intercepted the Yarramba Palaeochannel and mineralised intersections of **Uranium and Vanadium in basement rocks**

## Exploration Program 2024

1. Passive seismic, ground gravity and electrical methods to define palaeochannel architecture
2. Stakeholder engagement and clearance surveys
3. Drill testing of targets

Located ~12 km south of Honeymoon Uranium Mine and hosts  
Yarramba Palaeochannel



## **RADIUM HILL SOUTH PROJECT (SA)**

**Sandstone Hosted (Basal channel, tabular, roll-front, structural)**

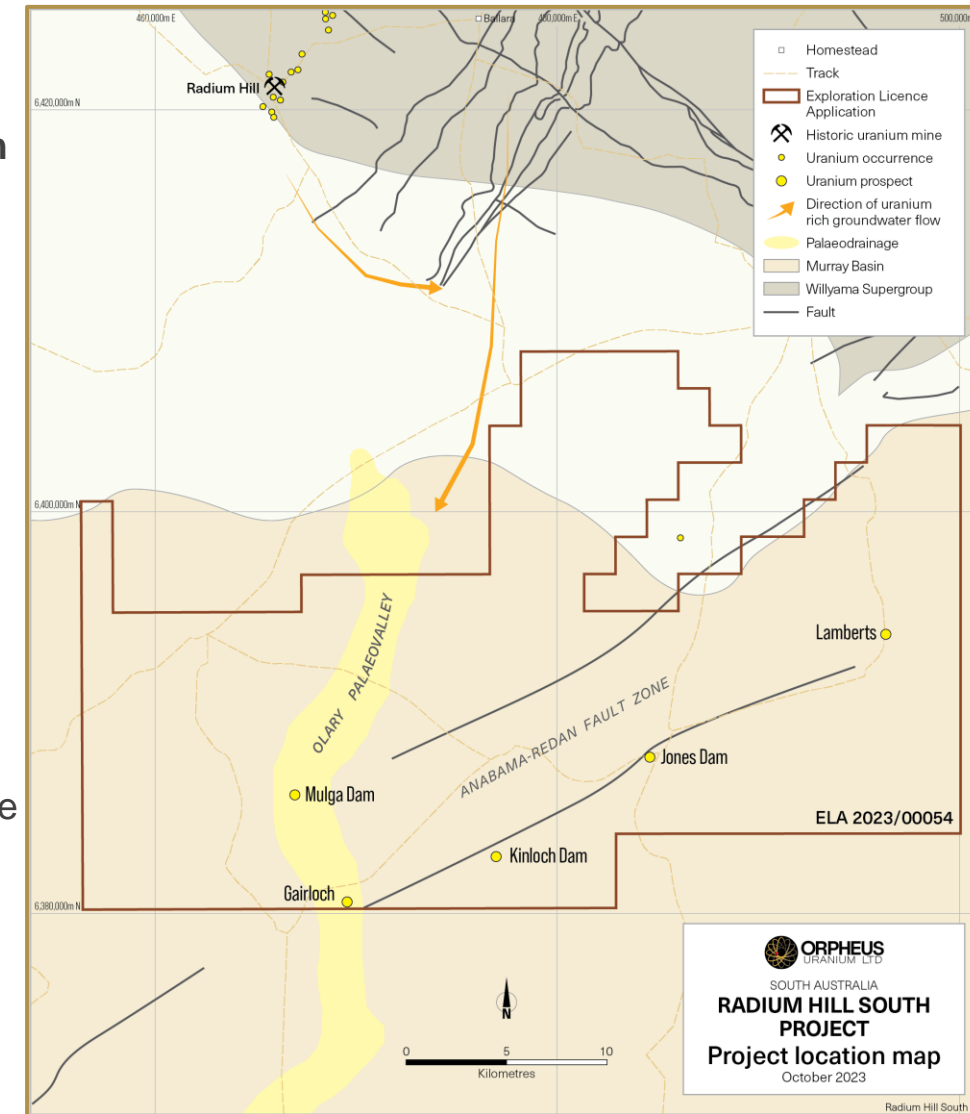
## The Radium Hill South Project is:

- Located ~20 km south of the highly radiogenic region of the historic **Radium Hill Uranium Field**
- Hosts the **Olary Palaeovalley System** that comprises prospective horizons equivalent in age to the Frome Embayment
- Hosts **five uranium prospects** that were abandoned due to market conditions in 2011
  - **Jones Dam, Kinloch Dam, Gairloch, Lamberts, Mulga Dam**
- Mega Hindmarsh (2005-2014) identified uranium mineralisation at depths of ~80 to 110 metres with intercepts of **5.1 m of steel grey sand @ 400 ppm eU<sub>3</sub>O<sub>8</sub>**

## Exploration Program 2024

1. Acquire and review Mega Hindmarsh geological and geophysical datasets
2. Passive seismic to define the palaeovalley architecture and Anabama-Redan Fault Zone
3. Stakeholder engagement and clearance surveys
4. Drill testing existing prospects and additional targets

**Five existing uranium prospects ready for immediate follow-up**





## **MOUNT DOUGLAS PROJECT (NT)**

### **Unconformity and Vein-type**

## The Mount Douglas Project is:

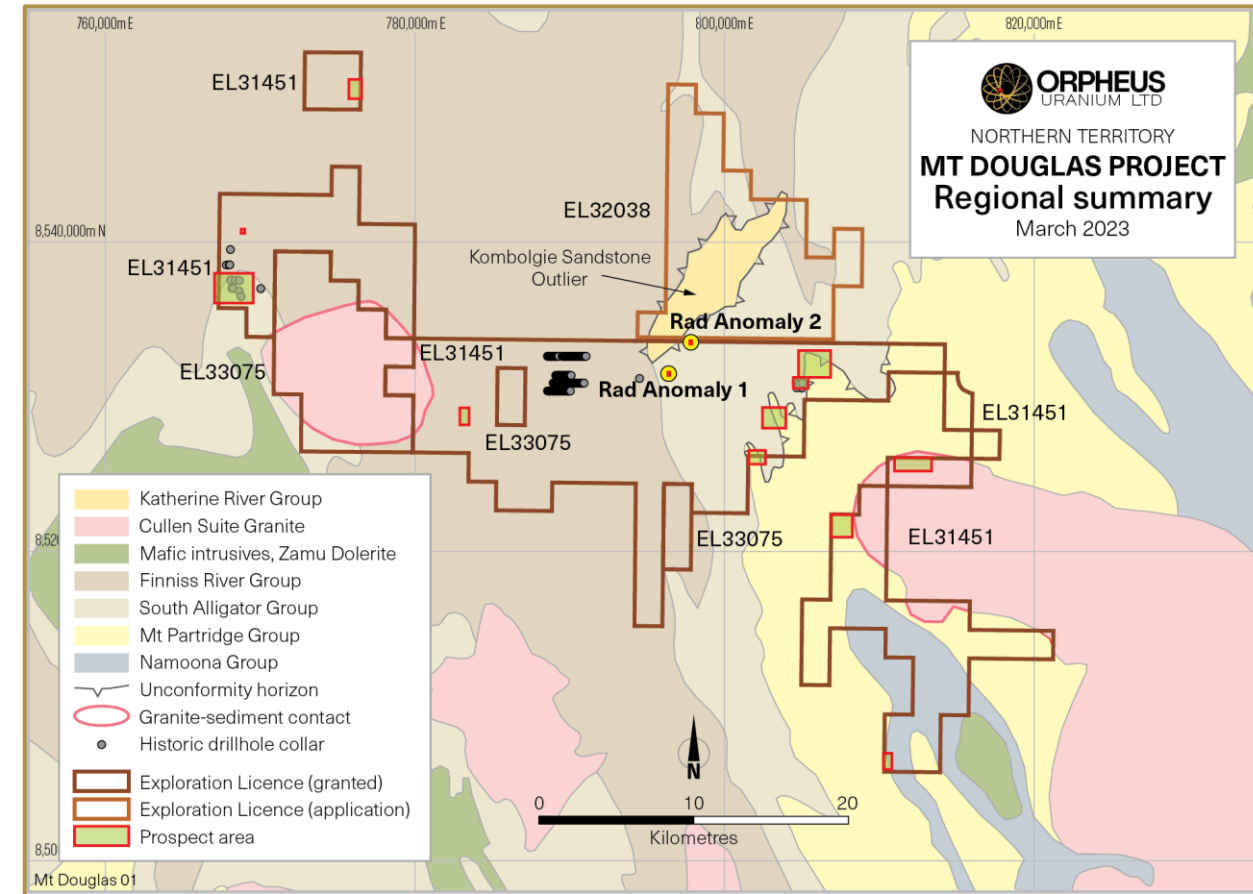
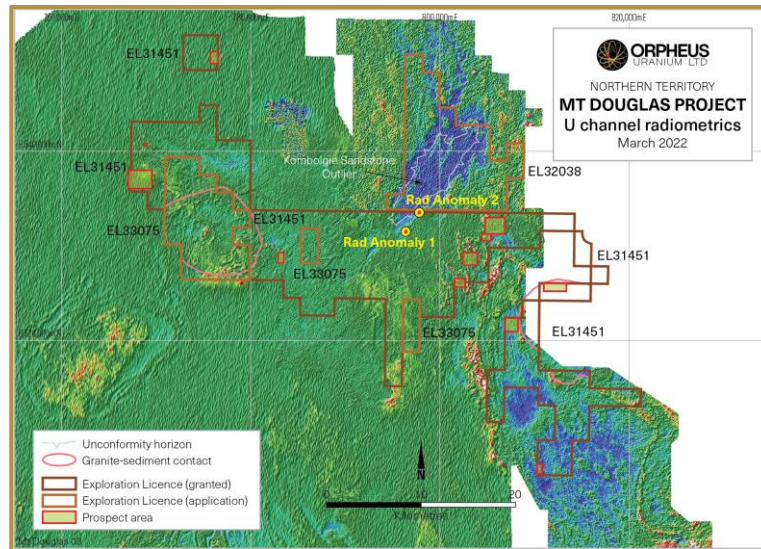
- Prospective for **unconformity and vein-style uranium mineralisation**
- Evidence of uranium mineralisation in rock chips up to **1,089 ppm U**
- **Radiometric anomalies** along margin of granite

## Exploration Program 2024

1. Stakeholder engagement
2. Explore surface radiometric anomalies
3. Costeaming and systematic sampling
4. Drilling



*Elevated radioactivity in ferruginous zone measured using scintillometer by Orpheus*



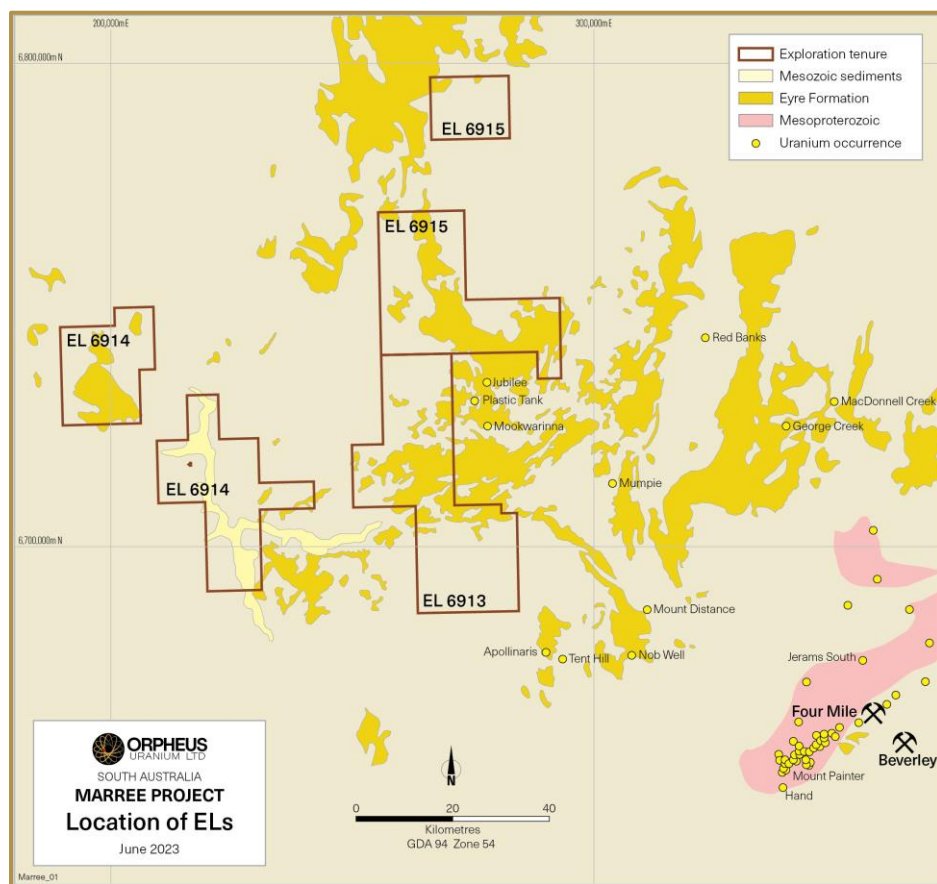


## OTHER URANIUM PROJECTS IN THE PIPELINE



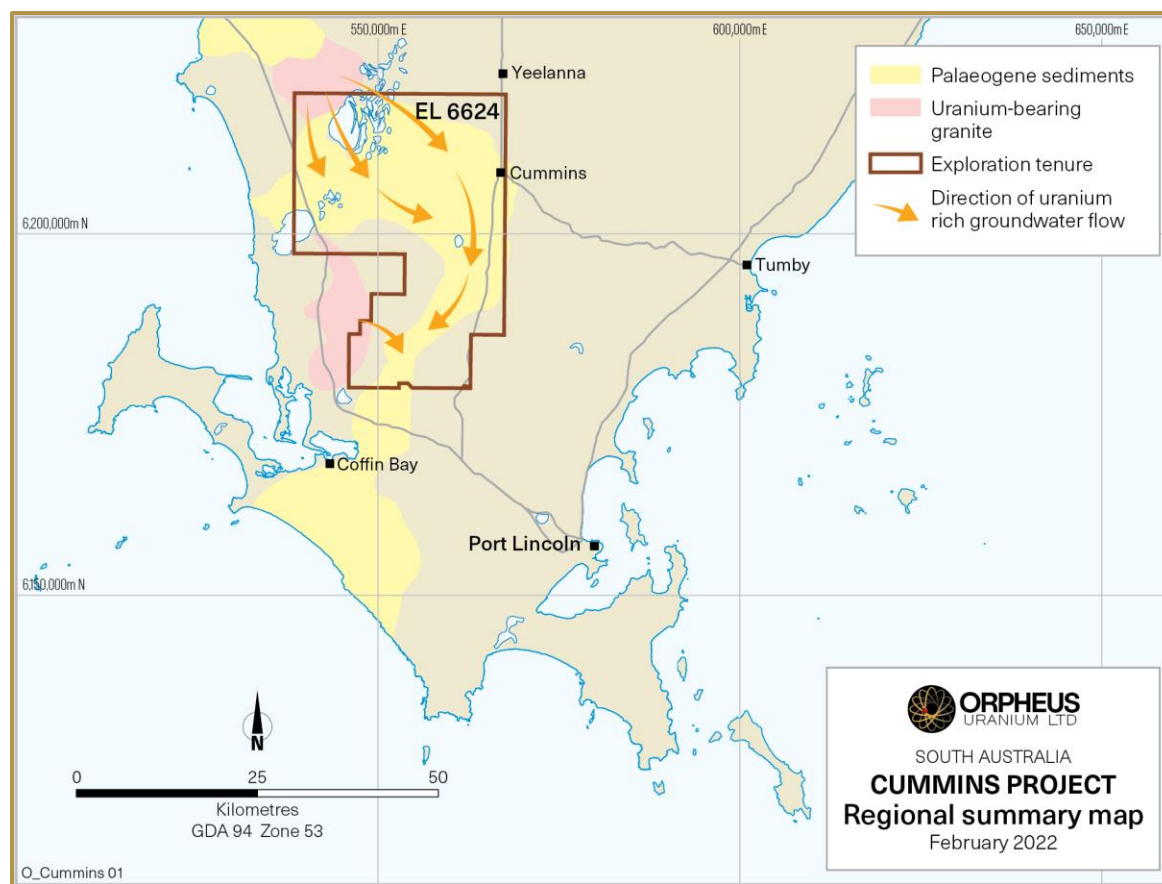
### The Marree project is:

- Located ~70 km northwest of the radiogenic region of the **Mount Painter Uranium Field** host to the Mount Gee hard rock uranium deposit and sandstone hosted Beverley and Four Mile Uranium Mines
- Prospective for roll-front, sedimentary and silcrete-hosted uranium mineralisation associated with **Tertiary and Cretaceous palaeochannels**



### The Cummins project is:

- Located on the Eyre Peninsula and hosts a portion of the **Cummins-Wanilla Basin** prospective for uranium mineralisation
- Palaeochannels lie proximal to radiogenic Proterozoic **Dutton Suite** granites



## ORPHEUS URANIUM SUMMARY

# Why Invest in Orpheus?

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## Right time in the commodity cycle

- ✓ Surging Uranium Spot Price
- ✓ Significant Uranium Demand growth forecast <sup>1</sup>

Plenty of 2024 Orpheus field activity with multiple drilling opportunities

All projects 100% owned and highly prospective

## Focus on Frome Embayment

- ✓ Significant recent investor interest in companies which have demonstrated success in this prime location
- ✓ Orpheus following up on known mineralisation established by previous explorers
- ✓ Project development pathways well established

## Indicative Field Activity Schedule 2024

Project	Q 1	Q 2	Q 3	Q 4
<b>Frome Project</b>	Passive Seismic Heritage Clearance	Drilling		
<b>Mundaerno Project</b>	Passive Seismic	Ground Gravity Heritage Clearance	Drilling	
<b>Radium Hill South Project</b>	Passive Seismic	Heritage Clearance	Drilling	
<b>Mount Douglas Project</b>		Costeaning Heritage Clearance	Drilling	

<sup>1</sup>[www.world-nuclear.org/information-library/nuclear-fuel-cycle/uranium-resources/uranium-markets](http://www.world-nuclear.org/information-library/nuclear-fuel-cycle/uranium-resources/uranium-markets)



ASX Code	ARE
Shares on Issue	152.7 million
Market Cap (27 Nov 2023)	A\$16.8 million
Cash (1 Nov 2023)	A\$3.0 million
Debt	NIL
Top 20 Holders (24 Nov 2023)	53.9%

Board of Directors	
Mick Billing	Chairman
Simon Mitchell	Non-executive Director
Richard Willson	Director and Company Secretary

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**ORPHEUS**  
URANIUM LTD

Registered Office:

79 King William Road  
Unley, South Australia 5061

Phone +61 8 8231 0381

Email: [info@argonautresources.com](mailto:info@argonautresources.com)

Website: [www.argonautresources.com](http://www.argonautresources.com)