

ASX: ORP



Discovering Tomorrow's Clean Energy

RIU SYDNEY RESOURCES ROUND UP CONFERENCE
MAY 2024

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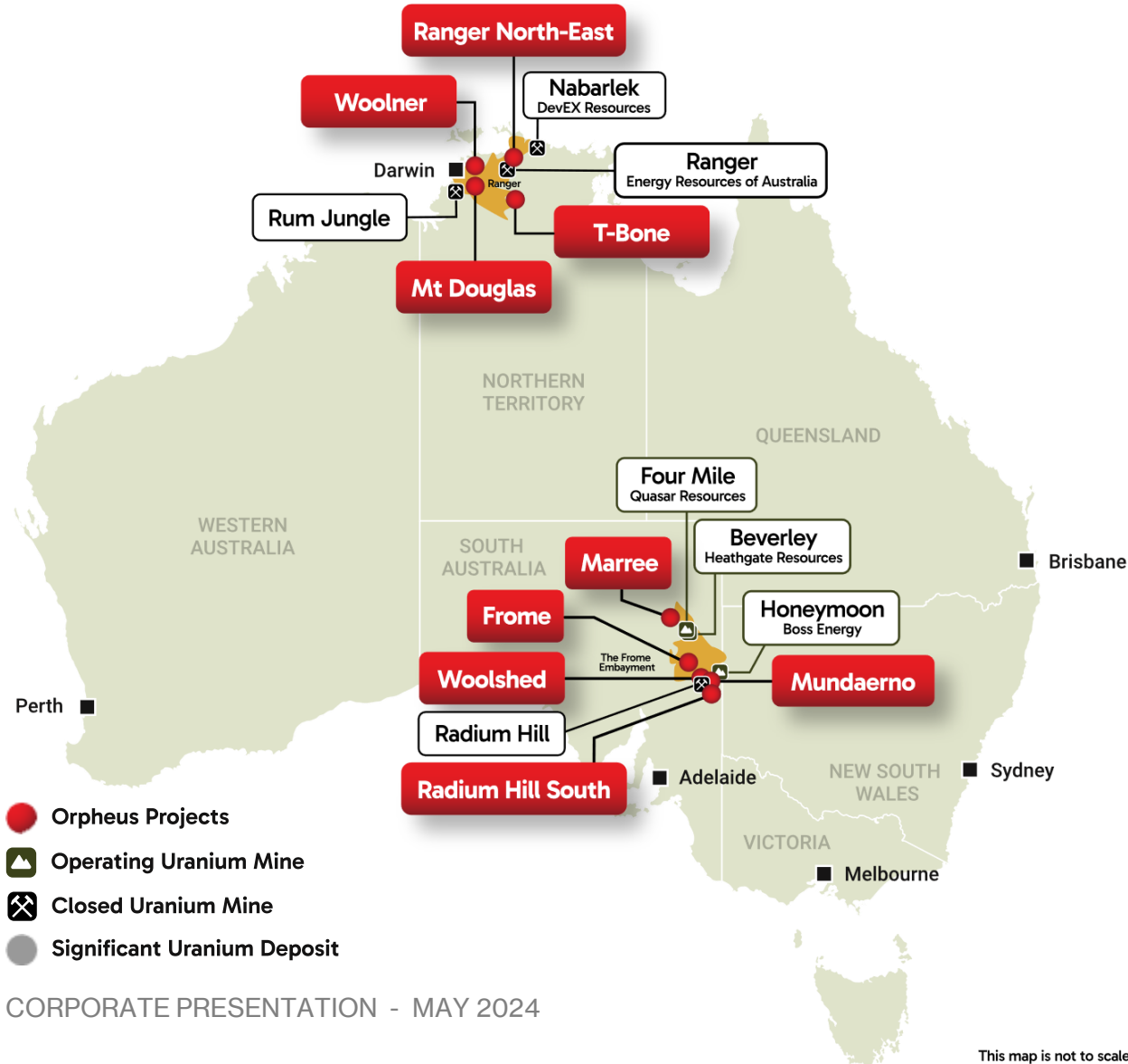
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This Presentation contains third party data relating to the industries, segments and markets in which the Company operates or aims to operate (Industry Data). This information has been prepared using publicly available data. The Industry Data includes third party market data, estimates and projections. There is no assurance regarding the accuracy of the Industry Data, and the Industry Data has not been independently verified by the Company.

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 Orpheus Uranium Limited. 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.

Major Investment Highlights



DRILL READY & HIGH IMPACT PROGRAM

- ✓ Uranium exploration in the two jurisdictions of Australia that allow uranium exploration and mining, South Australia and the Northern Territory.
- ✓ Targeting world-class uranium exploration regions, the Frome Embayment and Pine Creek Orogen, the location of currently operating and historic uranium mines.
- ✓ Drill targeting 100% owned, advanced uranium exploration projects with a healthy \$5 Million cash balance and poised for market growth
- ✓ Major projects include Frome, Mundaerno, Radium Hill South and Mt Douglas

High Impact Drilling Program



INDICATIVE FIELD ACTIVITY SCHEDULE 2024

PROJECT	Q1	Q2	Q3	Q4
Frome Project	Passive Seismic Heritage Clearance	DRILLING		
Radium Hill South Project	Site Reconnaissance	Passive Seismic Heritage Clearance	DRILLING	
Mundaerno Project	Site Reconnaissance	Ground Gravity Passive Seismic	Heritage Clearance	DRILLING
Mount Douglas Project		Mapping, Sampling, Costeaming		Drilling preparations

Key South Australian Projects



Leveraging results of previous explorers who halted work in 2011-14

Frome Project

~12km west of Gould's Dam Uranium Deposit, located in a globally significant location in terms of discovered economic sandstone hosted uranium deposits

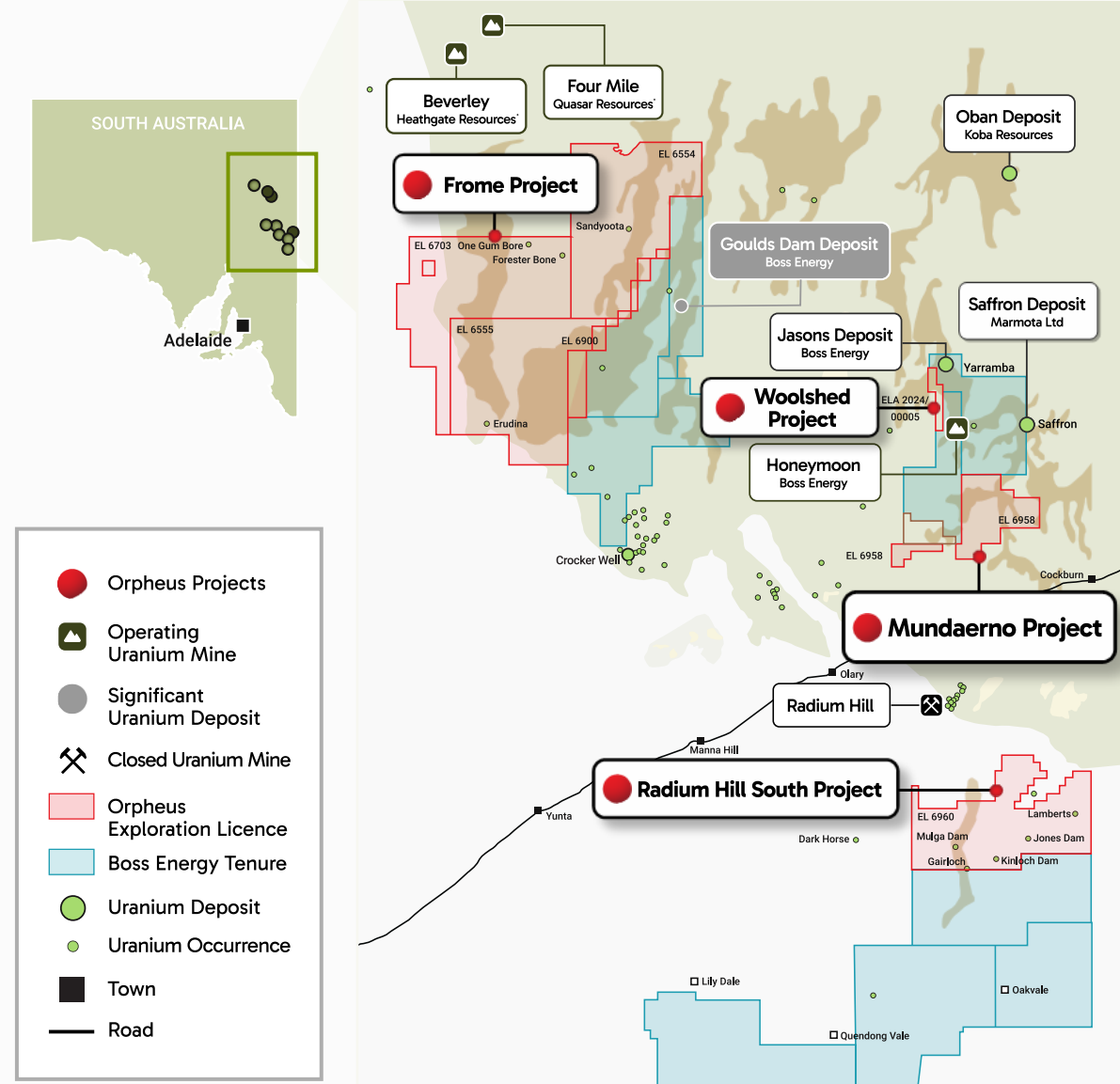
Frome Embayment (SA) – a good place for a uranium mine

Radium Hill South Project

~20 km south of Radium Hill Uranium Field and hosts five uranium occurrences

Mundaerno Project

~12km south of Honeymoon Uranium Mine and hosts part of the highly prospective Yarramba Palaeochannel

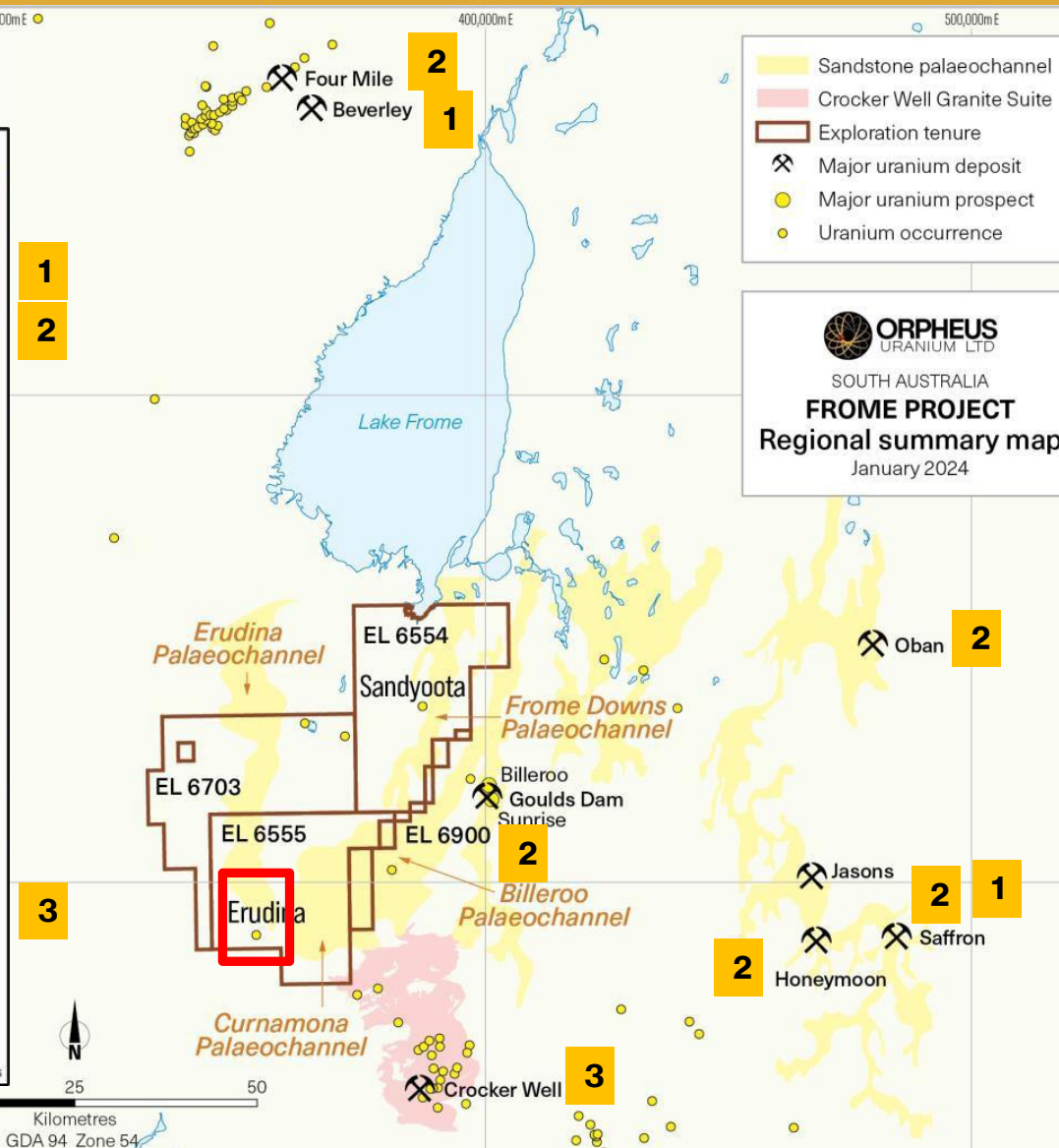


Frome Project

MULTIPLE TARGETS IN MULTIPLE PALAEOCHANNEL SYSTEMS

- ✓ Located ~12km west of Goulds Dam Uranium Deposit 25 Mlbs @523ppm U₃O₈
- ✓ Contains a significant footprint of prospective paleochannels: **Erudina, Curnamona, Frome Downs, Billeroo**
- ✓ Hosts four known uranium occurrences: **Erudina, Sandyoota, Forester Bore, One Gum Bore**
- ✓ Both **1** Namba and **2** Eyre formations have been intersected in drilling across the Frome Project
- ✓ **Erudina Exploration Target Zone**

AGE	BASIN	STRATIGRAPHIC UNIT	THERMAL MATURITY
CENOZOIC	Lake Eyre Basin (Catharina Sub-basin, incl. Pootlana trough)	Coonarbine Fm & equivalents	Sub-mature
		Eurinilla Fm & equivalents	
		Willawortina Formation	
		Namba Formation	
MESOZOIC	Eromanga Basin (Frome Embayment)	Mackunda Formation	Marginally mature
		Oodnadatta Formation	
		Coorikiana Ss	
		Bulldog Shale & equivalents	
PALEOZOIC	Arrowie Basin (Moorowie and Takapoo Sub-basins) Lake Frome Gp	Parabarana Ss	Late to post-mature
		Cadna-owie Formation	
		British Empire Granite (c. 442 Ma)	
		Grindstone Range Sandstone	
		Pantapinna Sandstone	
		Balcoracana Formation	
		Moodlatana Formation	
		Wirrealpa Limestone	
		Billy Creek Formation	
		Moorowie Formation	
Memmerna Formation			
NEOPROTEROZOIC	Coo-balarinie Platform	Wilkawillina Limestone	Metasediments
		Wilpena Group	
		Umberatana Group (incl. Yudnamutana Subgroup)	
MESOPROTEROZOIC	Murnan Province (Mt Painter & Mt Baboaga inliers)	Burra Group	Metasediments
		Callanna Group	
		Moolawatana Suite (c. 1560 Ma)	
		Mount Neill Granite & Pepegona Porphyry (c. 1580 Ma)	
MESOPROTEROZOIC	Curnamona Province	Radium Creek Group (<1595 Ma)	Metasediments
		Ninnerie Supersuite (incl. Crocker Well Suite & Honey-moon-type granite (c. 1590 Ma))	
PALEO-PROTEROZOIC	Curnamona Province	Willyama Supergroup (c. 1730-1640 Ma)	Metasediments



ORPHEUS URANIUM LTD
SOUTH AUSTRALIA
FROME PROJECT
Regional summary map
January 2024

Erudina Prospect

DRILLING AT ERUDINA PROSPECT PLANNED Q2 2024

Exploration Target Zone

Review of historic exploration defined the Erudina Exploration Target Zone:

- ✓ Defined from downhole gamma grades, 56 historic drillholes contained >100ppm EqU
- ✓ Peak grades are >1,500ppm EqU
- ✓ Extends across a 12km N-S by 7km E-W area
- ✓ Based on wide spaced ~1km drill traverses



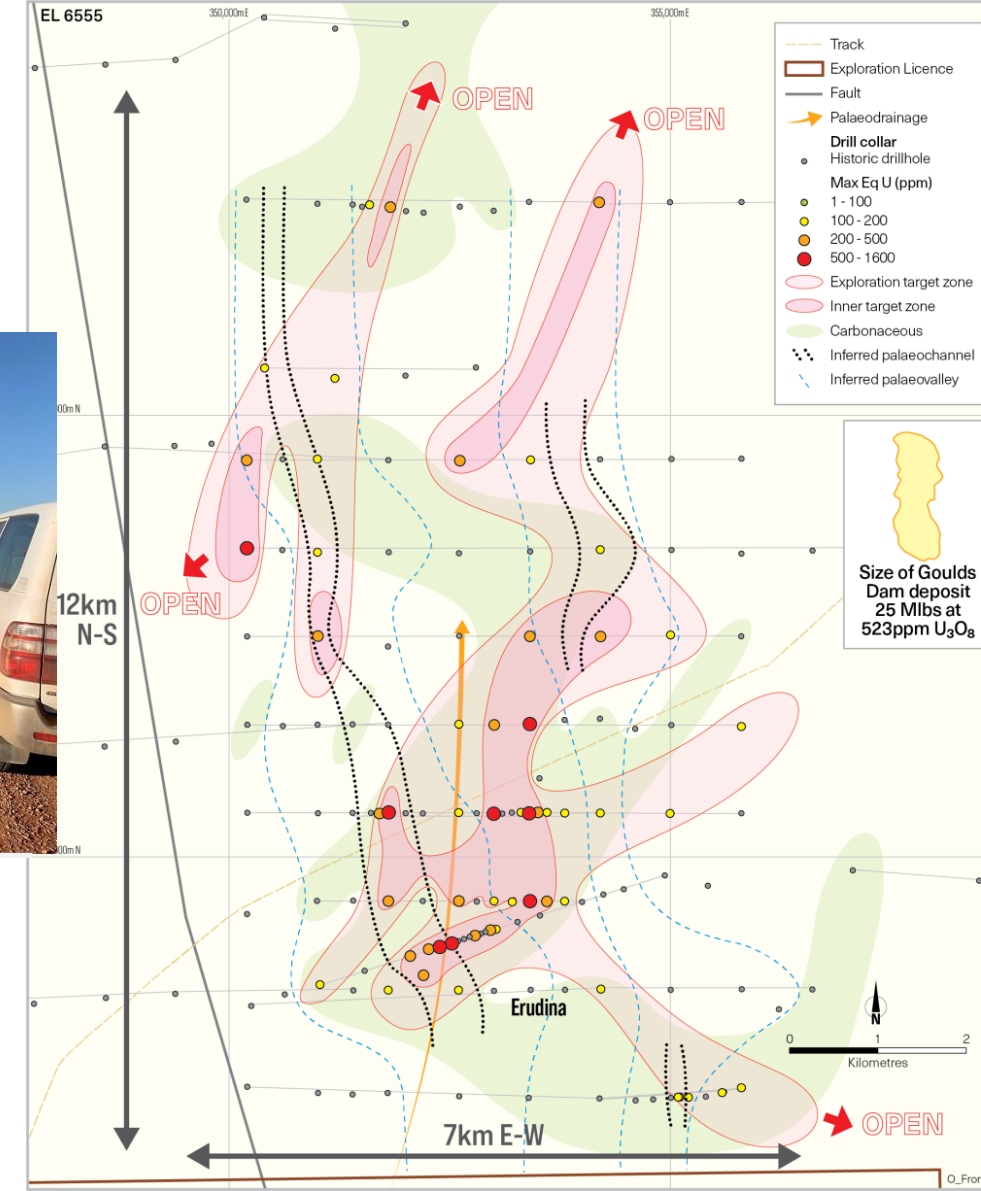
Rehabilitated drill site

Exploration Program 2024

Passive seismic, IP and drillhole delineation (Jan-Mar 2024)

Stakeholder engagement and clearance surveys (Feb 2024)

Drill testing at Erudina Prospect and Sandyoota, west of Goulds Dam (Q2 2024)



Radium Hill South Project



FIVE EXISTING URANIUM PROSPECTS READY FOR IMMEDIATE FOLLOW-UP

- ✓ Located ~20km south of the highly radiogenic region of the historic **Radium Hill Uranium Field 2.6 Mlbs @ 1,310ppm U₃O₈**
- ✓ 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**, uranium mineralisation at depths of ~80 to 110 metres

Prospect	Historic Results
Gairloch	1.9m @ 400ppm U₃O₈ from 103.8m at the contact between the base of a sand channel and underlying black carbonaceous clay
Jones Dam	2m @ 401ppm U₃O₈ from 86m in a strongly anomalous zone over 5.1m, within steely grey sand
Kinloch Dam	3m @ 507ppm U₃O₈ from 105m in sand below a silcrete layer

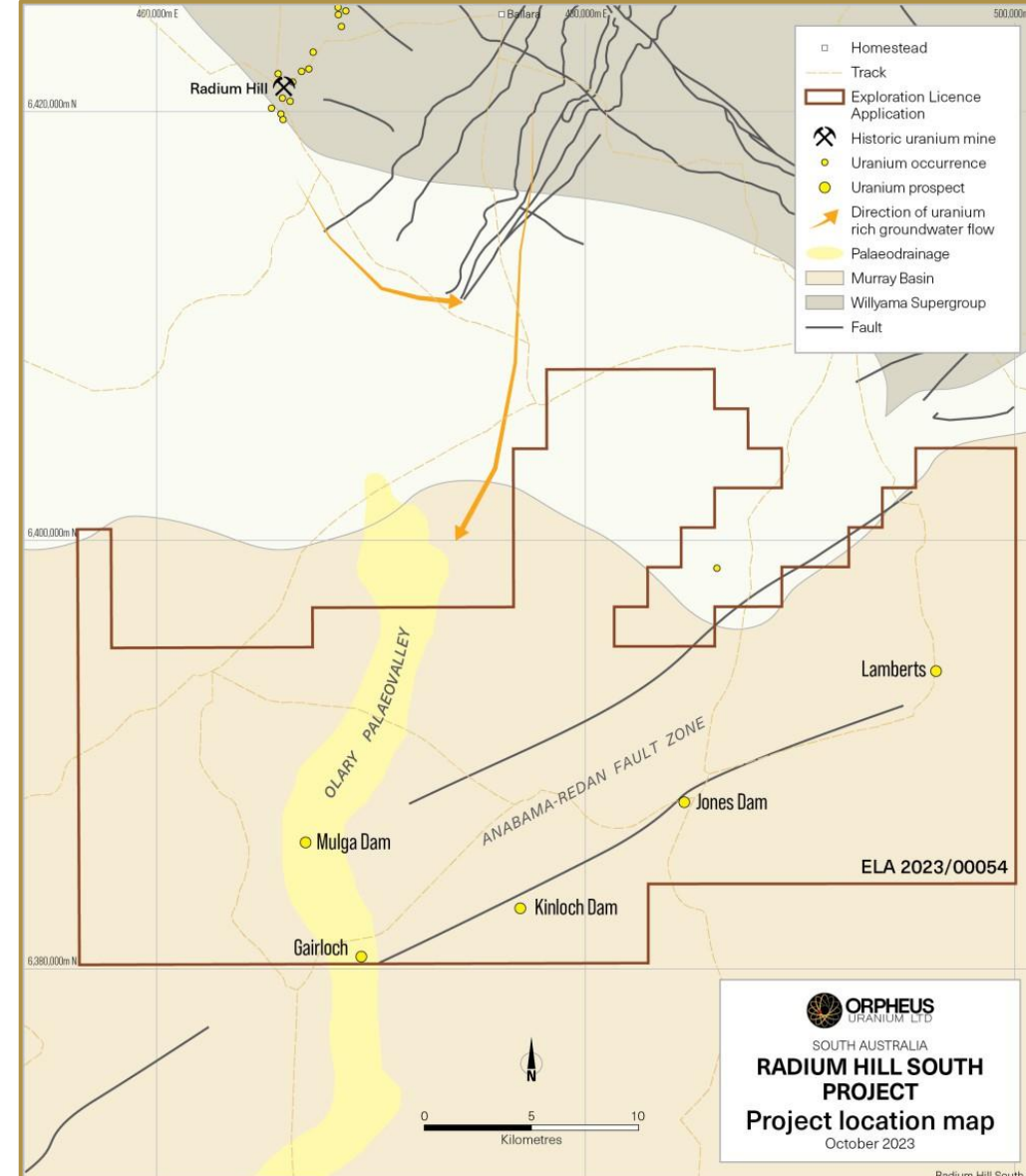
Exploration Program 2024

Passive seismic to define the palaeovalley architecture and Anabama-Redan Fault Zone

Stakeholder engagement and clearance surveys

Drill testing existing prospects and additional targets

CORPORATE PRESENTATION - MAY 2024



Mundaerno & Woolshed Projects

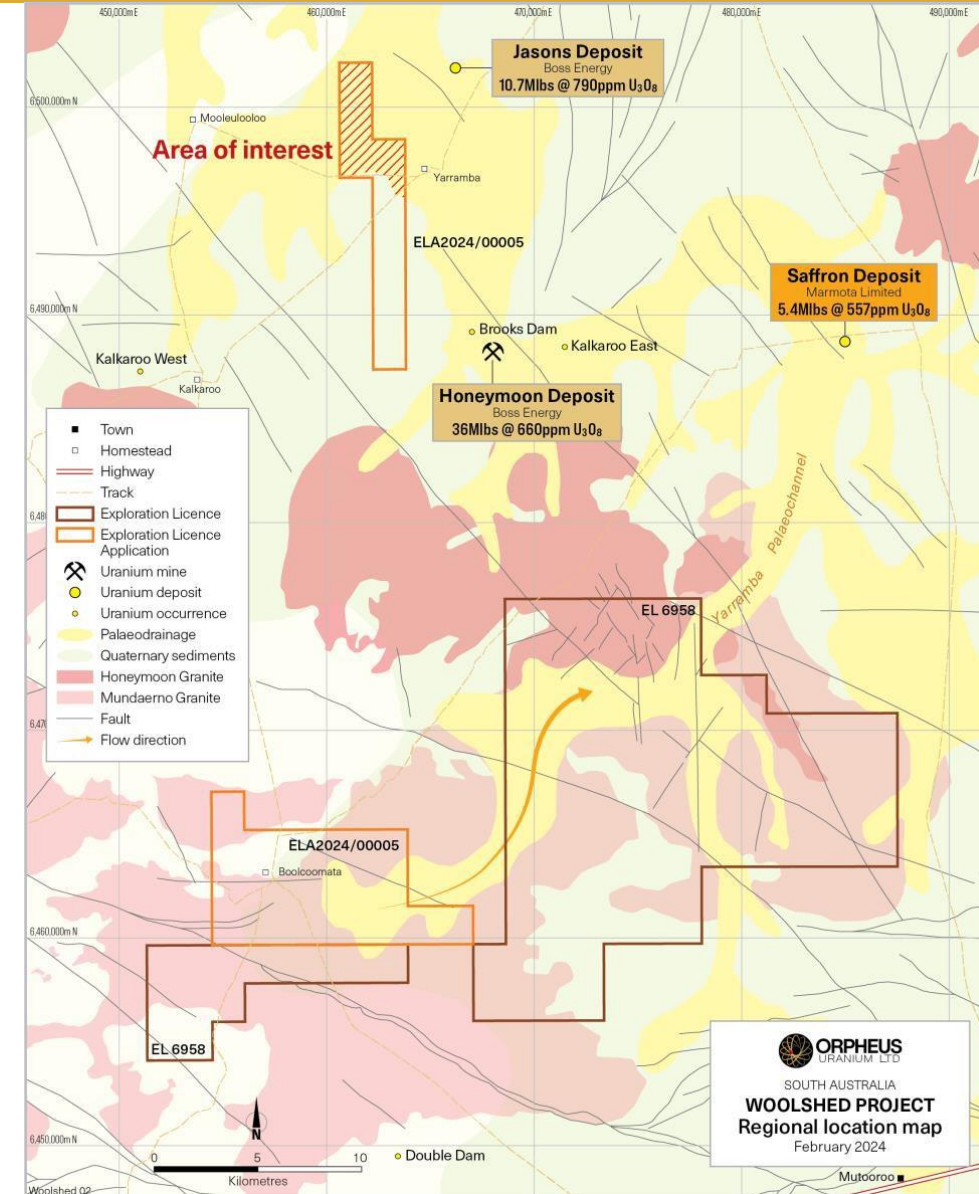
WOOLSHED EXPLORATION LICENCE APPLICATION PEGGED IN JANUARY 2024

- ✓ Hosts a bend in the **Yarramba Palaeochannel** just 4km west of **Jasons Uranium Deposit**
The Yarramba Paleochannel hosts the:
 - **Honeymoon Uranium Mine 36 Mlbs @ 660ppm U₃O₈**
 - **Jasons Uranium Deposit 10.7 Mlbs @ 790ppm U₃O₈**
 - **Saffron Uranium Deposit 5.4 Mlbs @ 557ppm U₃O₈**
- ✓ Limited historic exploration conducted in 1970's – importantly there is only one historic drillhole in the 'Area of Interest'
- ✓ The single drillhole intersected Tertiary sands, carbonaceous matter and lignite fragments
- ✓ Prized landholding in the Yarramba Palaeochannel: host to >50 Mlbs uranium resources

Exploration Program 2024

Stakeholder engagement and clearance surveys

Maiden drill testing of the Yarramba Palaeochannel targets



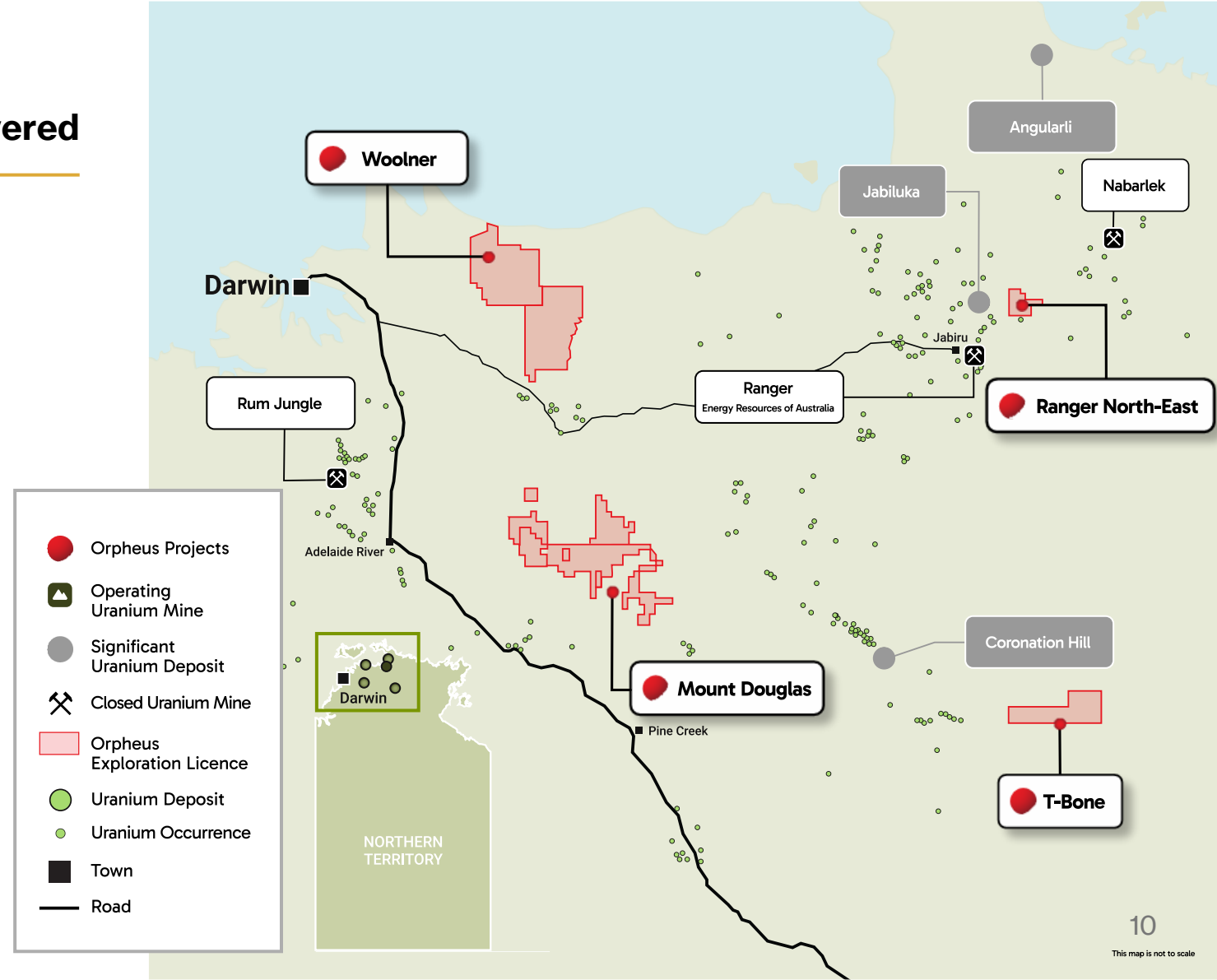
Significant historical production centre where Australia's large, high grade deposits are discovered

- **Targeting the Pine Creek Orogen**
 "Australia's Athabasca"

- **Targeting "Unconformity" and vein style mineralisation**
 Very underexplored, particularly in difficult-to-access areas of the Orogen

- **Strategy of building ground position**
 Strategic play across the Orogen, preparing multiple drill targets for the medium term

- **Key Project: Mount Douglas**
 Preparing to drill after preliminary field activities in 2024



Mount Douglas Project

PROSPECTIVE FOR UNCONFORMITY AND VEIN-STYLE URANIUM MINERALISATION

- ✓ Evidence of uranium mineralisation in rock chips up to **1,089ppm U**
- ✓ **Radiometric anomalies** along margin of granite
- ✓ Mapped unconformity contact with overlying Kombolgie Sandstone



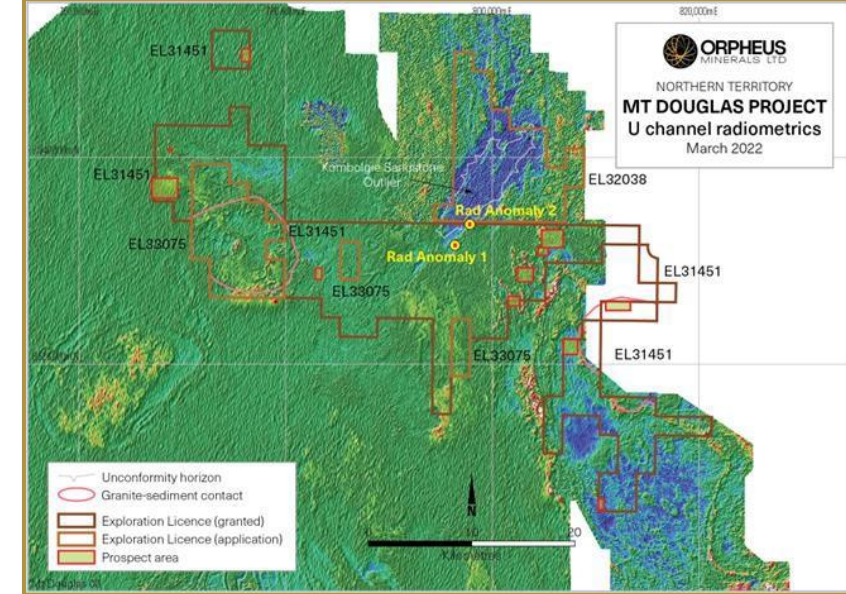
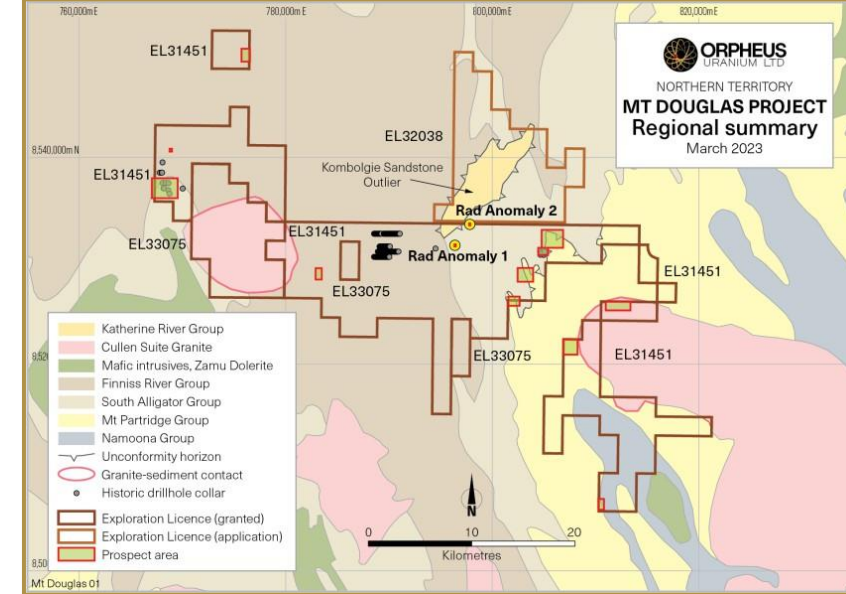
Helicopter assisted field reconnaissance



Hammer at the unconformity contact with overlying Kombolgie Sandstone



Elevated radioactivity from scintillometer (2,255cps)



Exploration Program 2024

Stakeholder engagement

Explore surface radiometric anomalies

Costeaming and systematic sampling

Dry Season Drilling

Corporate Summary



CAPITALISATION DATA

189.8M

Shares on issue

\$0.10

Share Price (1 May 2024)

\$18M

Market Capitalisation

NIL

Debt

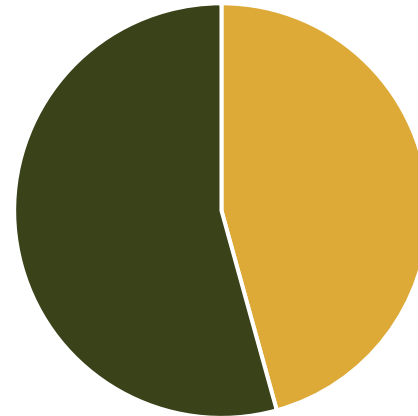
\$4.8M

Cash (31 Mar 2024)

\$1.3M

Listed Shares (1 May 2024)

ASX: ORP Shareholder Spread



52.3%
Top 20 Shareholders
& Directors

47.7%
Outside Top 20
Shareholders

6 Month Share Price



BOARD & MANAGEMENT

Mick Billing – Chairman

Clint Dubieniecki – CEO (incoming)

Simon Mitchell – Non-Exec Director

Todd Williams – Non-Exec Director

Richard Willson – Non-Exec Director & Co Sec



Uranium

The right commodity at the right time with very strong uranium price signal, robust demand growth, constrained supply response. Current uranium mine supply structural deficit a long time in the making.



Fully funded to drill

Recently restructured and recapitalised uranium focused company with operations in South Australia and Northern Territory, adjacent to companies with market caps some orders of magnitude higher.



All projects 100% owned and highly prospective

Includes significant exposure to two of the best geological domains in Australia – the Frome Embayment in South Australia and the Pine Creek Orogen in the Northern Territory.



Near term focus on the Frome Embayment

Significant recent investor interest in companies which have demonstrated success in this prime location, with Orpheus following up on known mineralisation established by previous explorers.



Drilling estimated to commence Q2 2024

A full drill pipeline with multiple targets defined. Drilling commencement is dependent on heritage agreements and clearances with Traditional Owners.

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Appendices - Endnotes

Orpheus reports Mineral Resources of uranium mines, deposits or past production that it considers comparable to the style and location of uranium mineralisation in which it explores, as presented on pages 5, 8 and 9 of this presentation, and listed in the table herein.

Project	Development Phase	Location	Company / Operator	Resource Classification	Average Grade (ppm U ₃ O ₈)	Contained Metal (Mlbs, U ₃ O ₈)	Source
Honeymoon Uranium Mine	Mine	Frome Embayment (Callabonna Sub-basin) South Australia	Boss Energy Limited ASX: BOE	Mineral Resource	660	36	Refer to ASX: BOE announcement dated 23 January 2024
Jasons Uranium Deposit	Resource			Inferred Resource	790	10.7	Refer to ASX: BOE announcement dated 23 January 2024
Goulds Dam Uranium Deposit	Resource			Combined Indicated and Inferred Resource	523	25	Refer to ASX: BOE announcement dated 23 January 2024
Saffron Deposit	Resource		Marmota Limited ASX: MEU	Inferred Resource	557	5.4	Refer to ASX: MEU announcement 26 October 2023
Radium Hill Historic Mine	Historic Mine	Curnamona Province	Areas reserved from the Mining Act, 1971 and Opal Act, 1995	Past production	1,310	2.6	Refer to https://minerals.sarig.sa.gov.au/MineralDepositDetails.aspx?DEPOSIT_NO=962
Crocker Well Deposit	Resource	South Australia	Sinosteel Uranium SA Pty Ltd	Combined Indicated and Inferred Resource	281	11.7	Refer to ASX: PNN announcement 28 April 2010