

# Quarterly Report

FOR PERIOD ENDING 31 MARCH 2024



## QUARTERLY HIGHLIGHTS

### Maiden Drilling Campaign Preparation - Frome Uranium Project, SA

**Orpheus Uranium Limited** (ASX: **ORP**) (*Orpheus* or the *Company*) has defined its initial drilling campaign within the Exploration Target Zone at the Erudina prospect, Frome project, set to commence once SA Government approvals are received (expected Q2 CY2024).

First-pass campaign of ~30 rotary mud drillholes for 7,000m drilling planned to initially target 12 historic drillholes that contain uranium mineralisation (using a nominal cut-off grade of 250ppm eU<sub>3</sub>O<sub>8</sub> with at least 0.5m vertical thickness that is applied to sedimentary-hosted uranium deposits in the district).

Drilling is primarily designed to:

- Identify sedimentary-hosted uranium mineralisation, targeting pyritic sands, gravels and carbonaceous material of the Lower Eyre Formation.
- Target 12 historic drillholes that contain uranium mineralisation ore grades.
- Test the mineralisation potential of palaeochannel features identified from interpretation of the detailed passive seismic survey.

### Heritage Survey

Traditional Custodians of the Adnyamathanha Traditional Lands Association RNTBC (ATLA), Archaeologists and representatives from Orpheus completed a Heritage Survey at the Frome project in February 2024 to secure access for the upcoming drilling campaign.

Orpheus awaits a formal response from ATLA (expected May 2024) in respect of the Heritage Survey report.

### Next Steps

Program for Environment Protection and Rehabilitation (PEPR) approval expected in the coming weeks. Orpheus will then prepare drill sites, mobilisation and logistics to commence drilling within the 12km Exploration Target Zone at Erudina and at the Sandyoota Region.

## Corporate Activity

### Change of Company Name

Orpheus completed its company name change from Argonaut Resources NL to Orpheus Uranium Limited and commenced trading on the ASX under the new code (ASX: ORP) on 22 February 2024.

### Appointment of Uranium Specialist CEO

Orpheus appointed Clinton Dubieniecki as Chief Executive Officer to commence late May 2024, bringing more than 15 years' experience within global businesses focussing on uranium.

### Zambian Project Withdrawal

Post Quarter end, Orpheus advised it withdrew from the Lumwana West project in Zambia.

**ORPHEUS URANIUM LIMITED**  
(previously Argonaut Resources NL)

**ASX: ORP** (previously ARE)  
orpheusuranium.com

#### CAPITAL STRUCTURE

**Issued shares:** 189.8M  
**Unlisted options:** 11M  
**Cash on hand:** \$4.8M

#### DIRECTORS

**Mick Billing** - Executive Chairman  
**Simon Mitchell** - Non-Exec Director  
**Richard Willson** - Non-Exec Director & Company Secretary  
**Todd Williams** - Non-Exec Director

#### URANIUM PROJECTS

Frome, SA 100%  
Radium Hill South, SA 100%  
Mundaerno, SA 100%  
Woolshed, SA 100%  
Marree, SA 100%  
Mount Douglas, NT 100%  
Ranger NE, NT 100%  
T-Bone, NT 100%  
Woolner, Marrakai, NT 100%

#### COPPER PROJECTS

Murdie, SA 100%  
Torrens, SA 100%  
Red Dam, SA 100%

#### LITHIUM & GOLD PROJECTS

Higginsville, WA 80%

## Uranium Assets, South Australia and Northern Territory

Orpheus holds interests in uranium projects in South Australia and the Northern Territory (Figure 1). In South Australia there are five key project areas, Frome, Radium Hill South, Mundaerno, Woolshed and Marree. In Northern Territory there are four key project areas: Mount Douglas, Woolner, Alligator Rivers Uranium Field and South Alligator Valley Mineral Field.

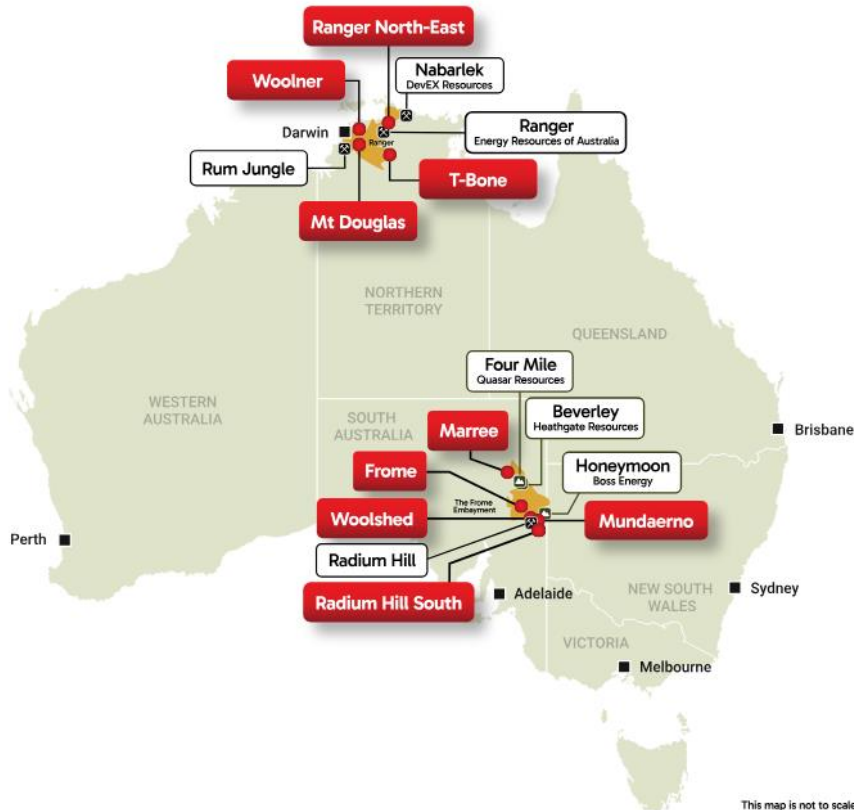


Figure 1: Location map of uranium assets owned by Orpheus located in South Australia and Northern Territory

### New Uranium Project – Woolshed

- Orpheus pegged EL 6989 Woolshed Project, located 4km west of Boss Energy's (ASX: BOE) Honeymoon Uranium Mine and Jasons Uranium Deposit.
- The Northern Block contains a portion of the highly prospective Yarramba Palaeochannel.
- Orpheus has commenced preparations for land access and exploration programs involving geophysical surveys, geochemical sampling and drilling.

The recent acquisition of Woolshed, in addition to the Company's Frome, Mundaerno and Radium Hill South projects in SA, combined covers a considerable surface footprint of palaeochannels in the highly prospective region of the Frome Embayment in the north, the Southern Curnamona Province and to the south, the northern margin of the Murray-Darling Basin, in the exploration for sedimentary-hosted roll-front and tabular-style uranium mineralisation (Figure 2).

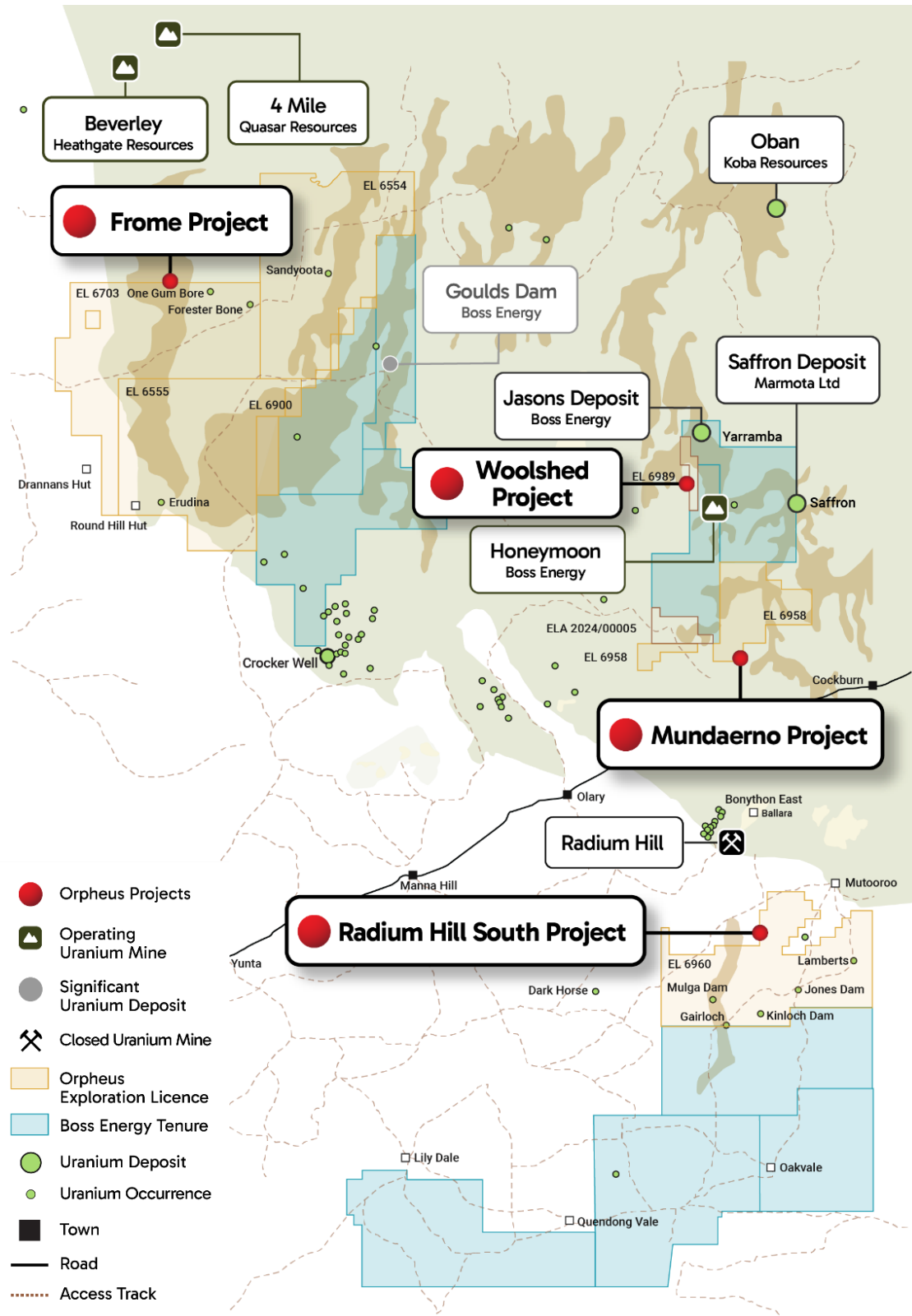


Figure 2: Project locations and uranium occurrences in the highly prospective region of the Frome Embayment, the Southern Curnamona Province and to the south, the northern margin of the Murray-Darling Basin

## South Australia – Frome Project (ORP, 100%)

### Erudina Prospect Maiden Drilling Campaign

Orpheus has identified a highly encouraging, widespread Exploration Target Zone containing significant uranium mineralisation at the Erudina prospect, that extends across an area of 12km N-S by 7km E-W, comprising prospective Cenozoic sequence stratigraphy located within the Erudina Palaeochannel (Figure 3). Orpheus has selected this 12km strike length Exploration Target Zone for immediate infill drilling, with preparations well underway.

For further detail, see ASX announcement [18 December 2023](#).

During the Quarter, Orpheus defined its initial drilling campaign within the Exploration Target Zone at the Erudina prospect:

- ~30 rotary mud drillholes for 7,000m drilling planned as a first-pass campaign to initially target 12 historic drillholes that contain uranium mineralisation (using a nominal cut-off-grade of 250ppm eU<sub>3</sub>O<sub>8</sub> with at least 0.5m vertical thickness that has been applied to sedimentary-hosted uranium deposits in the district) (Figure 3).

Drilling is primarily designed to:

- Identify sedimentary-hosted roll-front and tabular style uranium mineralisation, targeting pyritic sands, gravels and carbonaceous material of the Lower Eyre Formation.
- Target 12 historic drillholes that contain uranium mineralisation ore grades.
- Test the mineralisation potential of palaeochannel features identified from interpretation of the detailed passive seismic survey.

Importantly, there has been no historic drilling north or south between traverses and this N-S orientation is of specific interest given the hydrogeological flow direction is predominately north-flowing that may influence roll-front geometries.

Experienced drilling contractor and geophysical wireline logger has been appointed for the drilling campaign that is due to commence once final regulatory and heritage clearance approvals are received, expected within the coming weeks.

### Heritage Survey Completed

Traditional Custodians of the Adnyamathanha Traditional Lands Association (Aboriginal Corporation) RNTBC (ATLA), Archaeologists and representatives from Orpheus completed a Heritage Survey at the Frome project in February 2024, covering 30 line-km at the Erudina prospect and a 12km traverse across the Sandyoota region.

Orpheus extends its sincere gratitude and respect to the Survey Team for its considerable effort to attend, conduct and complete the survey during hot weather conditions.

Orpheus awaits a formal response from ATLA in respect of the Heritage Survey report.

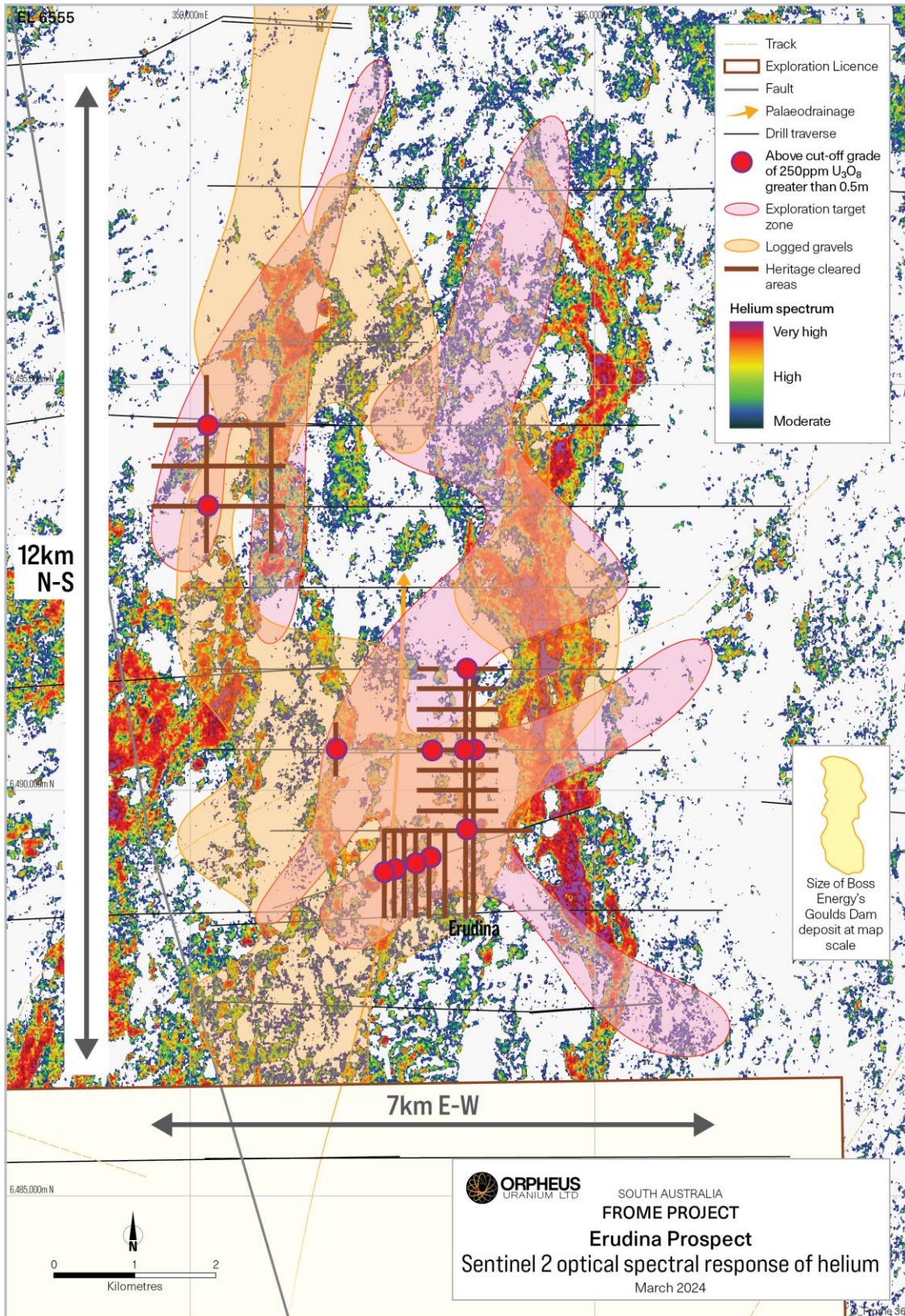


Figure 3: Erudina prospect has a 12km strike length Exploration Target Zone identified from historic drill results of significant uranium intersects (equivalent uranium converted from downhole Total Gamma) acquired by Areva Australia Pty Ltd, showing drillholes with ore-grade intersects, areas logged with Eyre Formation gravels and the areas planned for drilling, underlain by results of the satellite gas study - Sentinel 2 optical spectral response of helium.

## Induced Polarisation Survey

Orpheus completed a Trial Induced Polarisation (IP) Orientation Survey across the Exploration Target Zone at the Erudina prospect, to confirm whether IP may identify sedimentary-hosted disseminated pyrite, associated with uranium mineralisation in the Lower Eyre Formation.

For further detail, see ASX announcement [22 January 2024](#).

A total of 84 pole-dipole stations were positioned at 50m spacing as recommended by the consulting geophysicist, positioned across an area known to contain pyritic Eyre Formation that is also host to uranium mineralisation, targeting historic drill hole ER0048 that contains a combined mineralised thickness of 4.05m averaging 272 ppm eU<sub>3</sub>O<sub>8</sub>:

- 1.33m @ 180 ppm eU<sub>3</sub>O<sub>8</sub> from 168.99m;
- 0.79m @ 200 ppm eU<sub>3</sub>O<sub>8</sub> from 172.68m
- 0.76m @ 687 ppm eU<sub>3</sub>O<sub>8</sub> from 180.48m (including a maximum grade of 1,764 ppm eU<sub>3</sub>O<sub>8</sub>)
- 0.12m @ 102 ppm eU<sub>3</sub>O<sub>8</sub> from 185.98m
- 1.05m @ 191 ppm eU<sub>3</sub>O<sub>8</sub> from 186.57m

Results of the Trial IP Orientation Survey indicates the following:

- Resistivity defines the conductive layers very well reflecting primary lithologies, specifically the Namba and Eyre Formations, given they are saturated sedimentary layers containing sands, silts and clays, to a maximum depth of approximately 250m to basement. A structural fault is inferred on the eastern side of the traverse as basement appears much shallower, this fault may influence uranium mineralisation at depth (Figure 4).
- Chargeability defines a strong anomaly across an area 200-300m wide in the upper Namba Formation to approximately 100m depth, with the strongest zone between 50-100m. This anomaly on the western side of the traverse is interpreted as 'chargeable clays with different composition to the surrounding sediments'. This distinct IP anomaly is coincident with drillholes that contain pyrite intersections logged as '3-abundant pyrite' at depth, as shown in red, (Figure 5).

Further testwork is planned to analyse the chargeable clays, to determine whether the anomaly is related to abundant pyrite at depth.

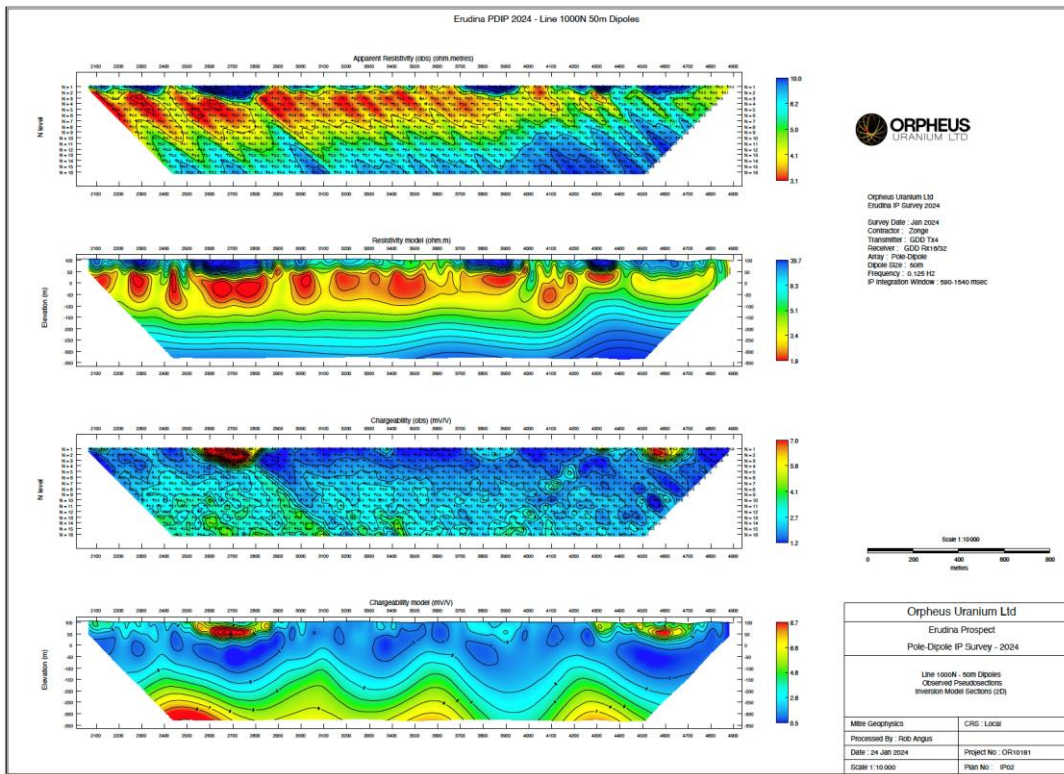


Figure 4: Erudina prospect, Trial IP 50m dipole results, observed data pseudo-sections (Panel 1. Resistivity; Panel 3. Chargeability) and 2D inversion model sections (Panel 2. Inverted Resistivity; Panel 4. Inverted Chargeability).

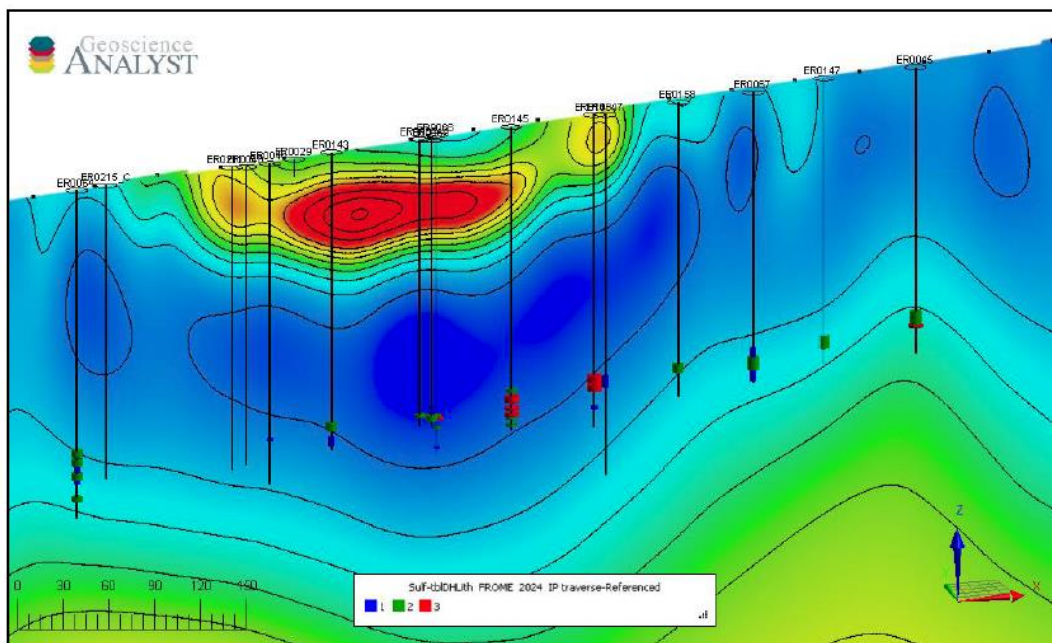


Figure 5: Erudina prospect, Trial IP inverted chargeability model section results identify a strong chargeability anomaly across an area 200-300m wide in the upper Namba Formation to approximately 100m depth, with the strongest zone between 50-100m, this IP anomaly is coincident with drillholes that contain pyrite intersections logged as '3-abundant pyrite' at depth, as shown in red.

### Prospectivity

The Frome project is comprised of four highly prospective exploration licences in the Frome Embayment area of South Australia which, directors believe, is the most prospective region in Australia for sandstone-hosted uranium deposits (Figure 6).

The Frome project covers large portions of the Erudina, Curnamona, Frome Downs and Billeroo palaeochannels, located ~12km west of the Goulds Dam deposit held by Boss Energy Ltd (ASX: BOE).

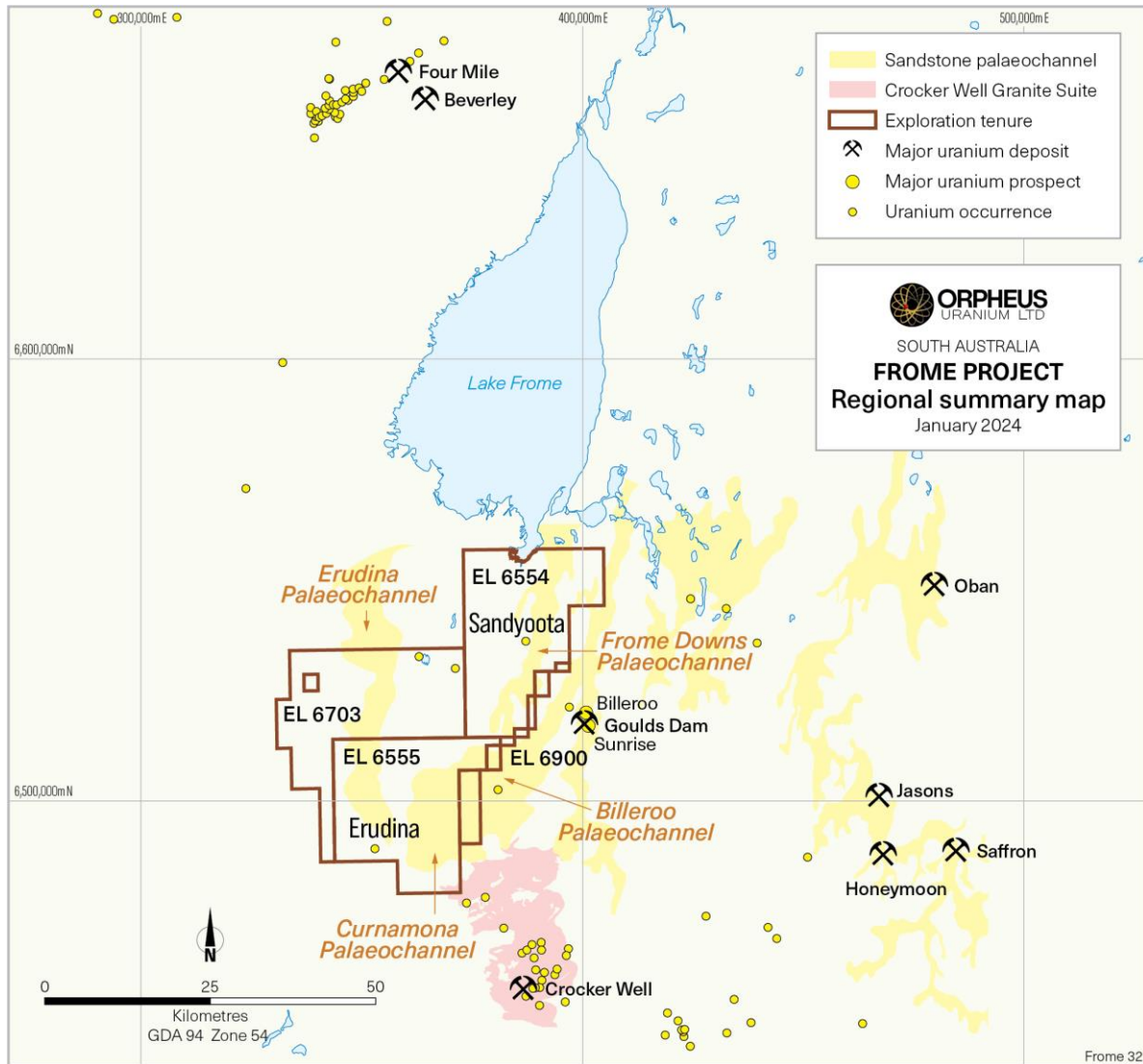


Figure 6: Frome project ELs with interpreted Eyre Formation palaeochannels, extending north from proposed uranium source rocks of the Crocker Granite Suite



## South Australia – Woolshed Project (ORP, 100%)

During the reporting period, Orpheus pegged an Exploration Licence Application ELA 2024/00005, the Woolshed project, containing two Blocks covering 87km<sup>2</sup> that has been subsequently granted (EL 6989). The Woolshed project is considered prospective for sedimentary-hosted roll-front and tabular-style uranium mineralisation associated with Cenozoic palaeochannels.

- The Northern Block contains a portion of the highly prospective Yarramba Palaeochannel and is situated 4km west of the Honeymoon Uranium Mine (36 Mlbs contained U<sub>3</sub>O<sub>8</sub>)<sup>1</sup> and Jasons Uranium Deposit (11 Mlbs contained U<sub>3</sub>O<sub>8</sub>)<sup>2</sup> held by Boss Energy Ltd (ASX: BOE) (Figure 7).
- The inferred Yarramba Palaeochannel located within the Northern Block has only one known historic drillhole (K-26) that penetrated the prospective Namba and Eyre Formations including carbonaceous matter and lignite particles reaching 169m total depth, importantly this confirms an established sedimentary sequence within EL 6989 Woolshed project.
- The Southern Block contains the headwaters of the Yarramba Palaeochannel situated directly on top of Mesoproterozoic granites and is contiguous with Orpheus' Mundaerno project.

The Woolshed project is proximal to the radiogenic Honeymoon Granite that is considered the source of uranium in the area, including the Honeymoon Uranium Mine, Jasons Uranium Deposit and the Saffron Uranium Deposit (5.4Mlbs contained U<sub>3</sub>O<sub>8</sub>) held by Marmota Limited (ASX: MEU)<sup>3</sup> (Figure 7). Airborne radiometric imagery reveals evidence of erosional processes, indicative of radionuclides shedding off the radiogenic Honeymoon Granite, directly across the Woolshed project and toward the Yarramba Palaeochannel (Figure 8).

This acquisition substantially increases the Company's footprint of the highly prospective Yarramba Palaeochannel.

### Prospectivity

The Woolshed project contains evidence of surficial uranium anomalism visible in state-wide airborne radiometric imagery. This is highly encouraging as it confirms erosional processes of detrital material carrying radionuclides are shedding from the radiogenic Honeymoon Granite, along drainage tributaries directly across the Woolshed project in the direction of the Yarramba Palaeochannel, refer to Figure 8.

The location of the Yarramba Palaeochannel has been recently revised by the Geological Survey of South Australia from an airborne electromagnetic (AEM) TEMPEST™ survey, flown in 2010 by Geoscience Australia, covering much of the Frome Embayment, Callabonna Sub-basin, and a portion of the northern Murray Basin. AEM is an optimum geophysical technique at mapping palaeodrainages in this region where thick sedimentary successions include stacked fluvial systems with channel sands saturated by variably saline groundwater<sup>4</sup>.

<sup>1</sup> Source: <https://bossenergy.com/honeymoon-project>

<sup>2</sup> Source: <https://bossenergy.com/honeymoon-project/exploration>

<sup>3</sup> Source: <https://marmota.com.au/projects/uranium-projects/>

<sup>4</sup> Hou, B., Fabris, A.J., Michaelsen, B.H., Katona, L.F., Keeling, J.L., Stoian, L., Wilson, T.C., Fairclough, M.C., 2012. *Paleodrainage and Cenozoic coastal barriers of South Australia: new map and GIS dataset*, Geological Survey of South Australia, DMITRE

### Exploration Program

Orpheus’ exploration objective is to locate suitable trap sites for sedimentary-hosted roll-front and tabular-style uranium mineralisation within the Yarramba Palaeochannel and its tributaries back toward the source of the radiogenic Honeymoon Granite.

Orpheus recently visited the area and commenced preparations for land access and exploration programs that will involve:

- Review of historic passive seismic geophysical data and the recent acquisition of the Sentinel-2 Satellite Imagery and Thermal Analysis data that covers the Woolshed project.
- Geophysical surveys, geochemical sampling, and drilling within the Area of Interest of the inferred Yarramba Palaeochannel and its tributaries that shed directly from the radiogenic Honeymoon Granite.

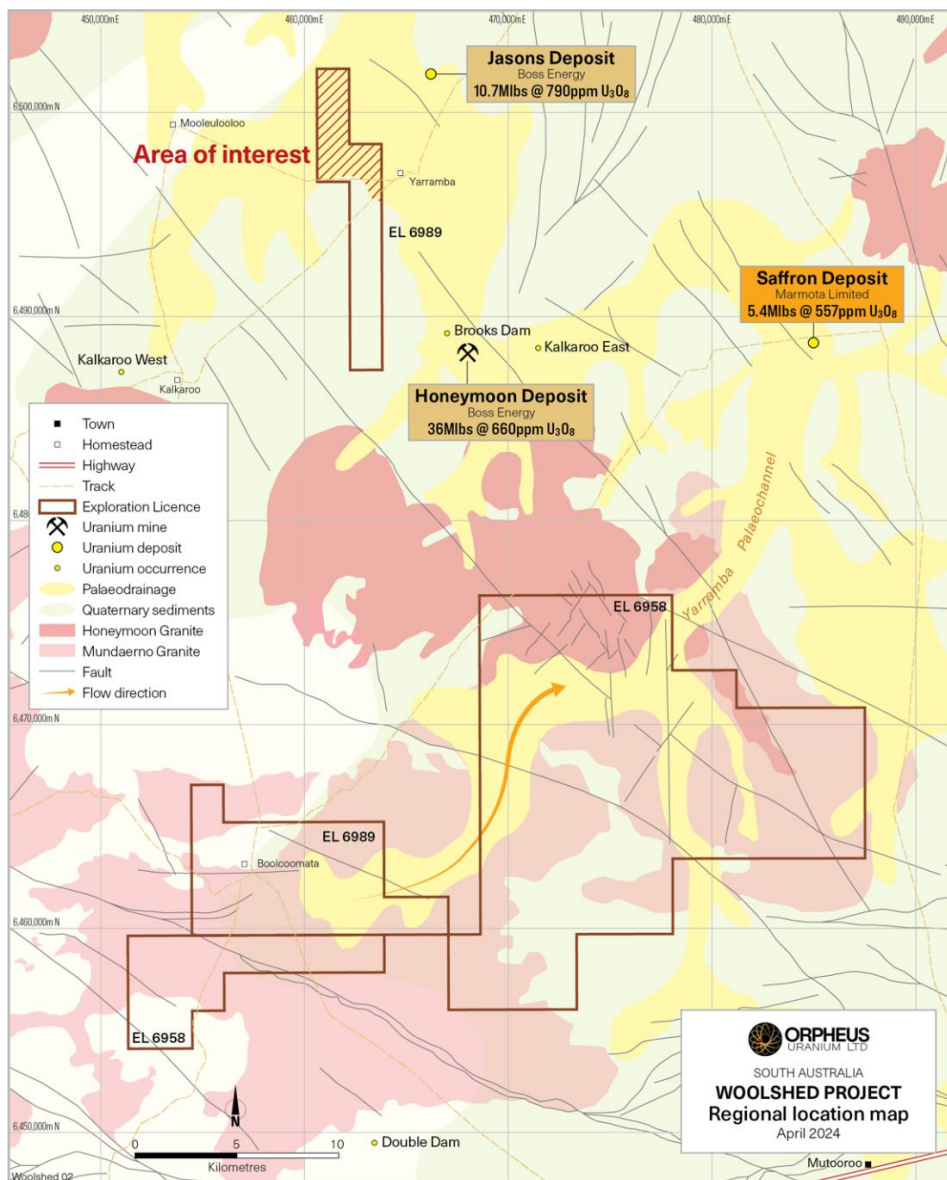


Figure 7: Woolshed project location (EL 6989) and nearby uranium occurrences, highlighting the ‘Area of Interest’ within the Yarramba Palaeochannel, 4km west of the Honeymoon Uranium Mine and Jasons Uranium Deposit, and contiguous with Orpheus’ Mundaerno project (EL 6958)

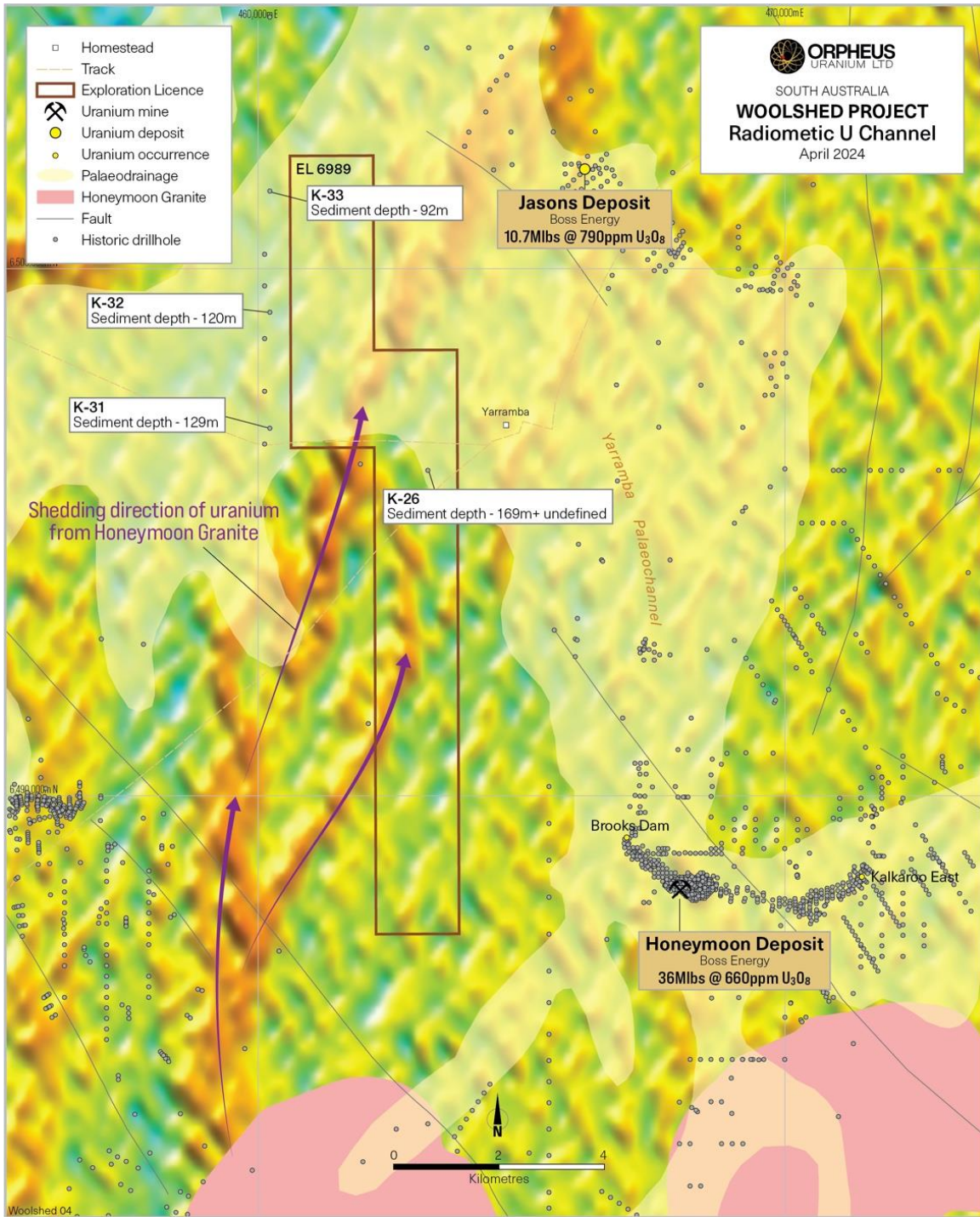


Figure 8: Northern Block of the Woolshed project location EL 6989 and nearby uranium occurrences, highlighting evidence of shedding of radionuclides from the radiogenic Honeymoon Granite transgressing toward the Woolshed project and the Yarramba Palaeochannel, historic drillhole labels indicate depth of Cenozoic sediments to basement

## South Australia – Radium Hill South Project (ORP, 100%)

The Radium Hill South project is considered highly prospective for roll-front and tabular-style, sedimentary-hosted uranium mineralisation associated with Cenozoic palaeochannels. The region is situated approximately 20km south of the radiogenic region of the Radium Hill Uranium Field and 100km southeast of the Crocker Well Uranium Field, host to the hard rock uranium deposits and further to the north, the Honeymoon and Goults Dam sediment-hosted Cenozoic palaeochannel uranium deposits. Refer to Figures 2 and 9.

### Prospectivity

Historic significant intercepts from the existing five uranium occurrences located within EL 6960 Radium Hill South project and reported by Mega Hindmarsh Pty Ltd<sup>5</sup> include:

- **Mulga Dam**
  - 1,350 cps at 95m depth in fluvialite, Lower Miocene carbonaceous clays.
- **Gairloch**
  - 2,266 cps at 104.1m at the contact between the base of a sand channel and underlying black carbonaceous clay, assay grade obtained by analysis of the drill cuttings from this interval was 400 ppm U<sub>3</sub>O<sub>8</sub> over 1.9m from 103.8m.
- **Kinloch Dam**
  - 507 ppm U<sub>3</sub>O<sub>8</sub> over 3m from 105m in M64 in sand below a silcrete layer;
  - 23m averaging 129 cps of radiometrically anomalous sand and clay.
- **Jones Dam**
  - 401 ppm U<sub>3</sub>O<sub>8</sub> over 2m from 86m in drillhole 06RMCD040 in a strongly anomalous zone over 5.1m, within steely grey sand;
  - 10.7m of radiometrically anomalous sand from 82.7m in drill hole 06RMCD048, associated with peak gamma values of 1,041cps, or 263 ppm eU<sub>3</sub>O<sub>8</sub>;
  - 3.6m of radiometrically anomalous sand from 98.9m in drill hole 06RMCD034, with a gamma maximum of 1,056 cps at 265 ppm eU<sub>3</sub>O<sub>8</sub>;
  - 3.4m of radiometrically anomalous oxidised sand and reduced sand with wood fragments in drill hole 07RMCD026 from 91.5m, includes 0.25m at 382 ppm eU<sub>3</sub>O<sub>8</sub>.
- **Lamberts**
  - Best intercept was 0.7m at 0.073% U<sub>3</sub>O<sub>8</sub> at 102.2 m in drillhole WE1.

For further detail, see ASX announcement [9 October 2023](#) and [7 December 2023](#).

### Exploration Program

Orpheus' exploration objective is to target sedimentary-hosted roll-front and/or tabular-style uranium mineralisation located within palaeochannel drainage features and along the buried escarpment of the northeast-southwest trending Anabama-Redan Fault.

- Orpheus will acquire passive seismic, ground gravity and electrical method surveys to constrain palaeochannel margins, map structures, determine the effects of faulting, and basement topography.
- Drilling of high priority targets at the existing five uranium occurrences located within EL 6960 Radium Hill South project; **Mulga Dam, Gairloch, Kinloch Dam, Jones Dam and Lamberts**.

<sup>5</sup> Source: Uranium grades extracted from Open File Report, Envelope 11421 compiled by Mega Hindmarsh Pty Ltd during the period 2005 to 2014, Cronje Dam Project.

Orpheus has commenced compiling existing datasets of the five uranium prospects: Mulga Dam, Gairloch, Kinloch Dam, Jones Dam and Lamberts, in preparation toward drilling.

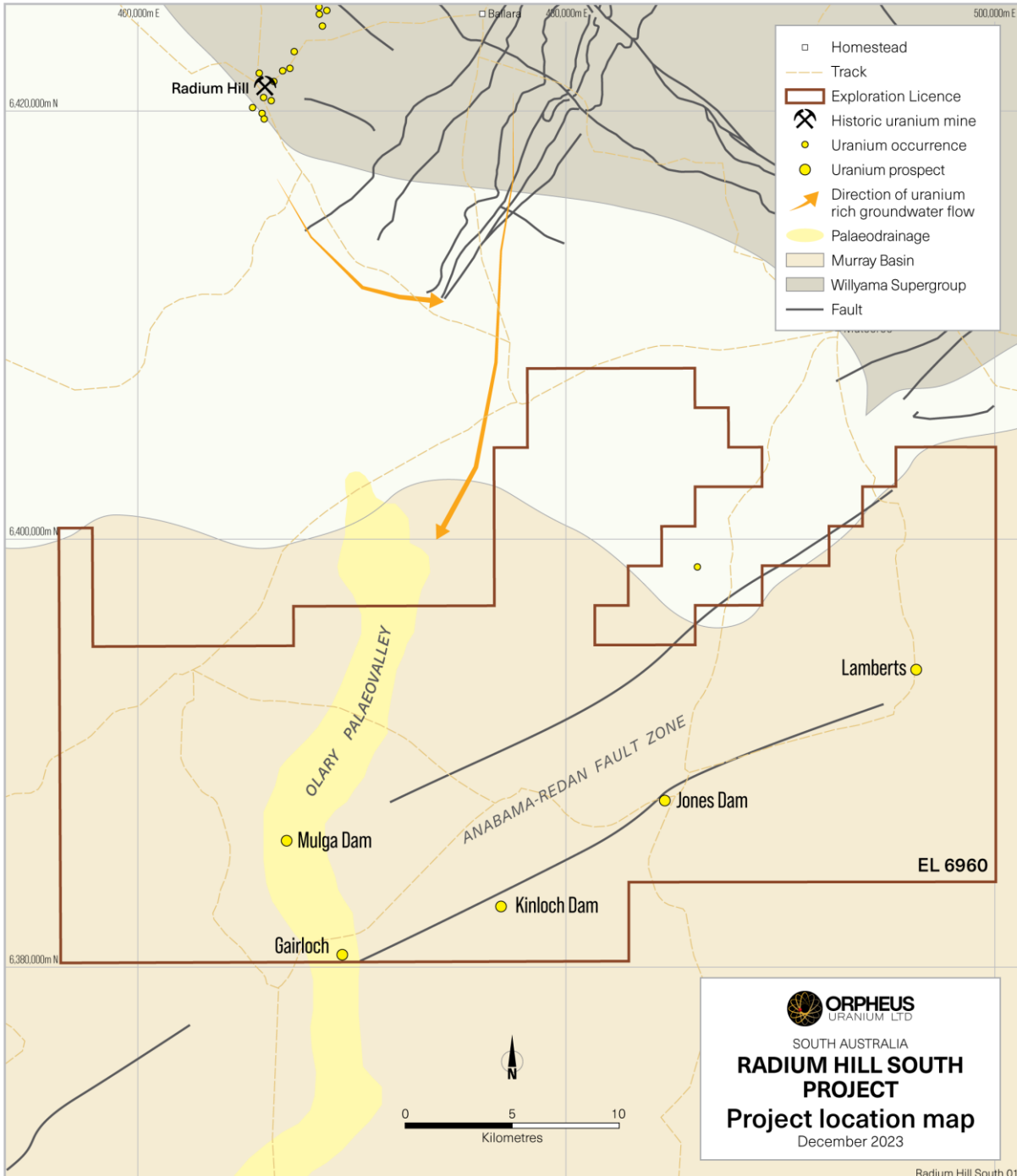


Figure 9: Radium Hill South project location and uranium occurrences, highlighting the five uranium occurrences located within the competitive licence application that was granted to Orpheus, located 20 km south of the Radium Hill Uranium Field

## South Australia – Mundaerno Project (ORP, 100%)

The Mundaerno project is considered highly prospective for sedimentary-hosted roll-front and tabular-style uranium mineralisation associated with Cenozoic palaeochannels. The project is situated approximately 12 km south of the Honeymoon Uranium Mine and has the same palaeochannel feature, the Yarramba Palaeochannel that hosts the Honeymoon Uranium Mine (36 Mlbs contained  $U_3O_8$ ), Yarramba (Jasons) deposit (11 Mlbs contained  $U_3O_8$ ) held by Boss Energy Ltd (ASX: BOE) and the Saffron deposit (5.4 Mlbs contained  $U_3O_8$ ) held by Marmota Limited (ASX: MEU) as well as other uranium occurrences. Refer to Figure 10.

### Geology

The Mundaerno project is situated in the Southern Curnamona Province comprising Proterozoic metasediment and metavolcanic units of the Willyama Supergroup and Mesoproterozoic granites of the Bimbowrie Suite, including the Mundaerno Suite. Cenozoic and Quaternary sediments lie directly on top of gneissic and granitic basement rocks with varying thickness.

### Exploration Program

Orpheus' exploration objective is to delineate the margins of the Yarramba Palaeochannel via geomorphological reconstruction of the palaeochannel and palaeovalley surface, to locate suitable trap sites for sedimentary-hosted roll-front and/or tabular-style uranium mineralisation. The work program proposed for the Mundaerno project includes:

- Map the palaeosurface via acquisition of passive seismic, detailed ground gravity and electrical methods;
- Prospect scale geochemical sampling via direct measures of uranium (radon sampling, surface geochemical sampling); and
- Drilling of high priority targets within the Yarramba Palaeochannel.

During the Quarter, Orpheus conducted site reconnaissance to the Mundaerno and Woolshed projects to meet with stakeholders in preparation to explore for sedimentary-hosted uranium mineralisation within Cenozoic sediments of the Yarramba Palaeochannel.

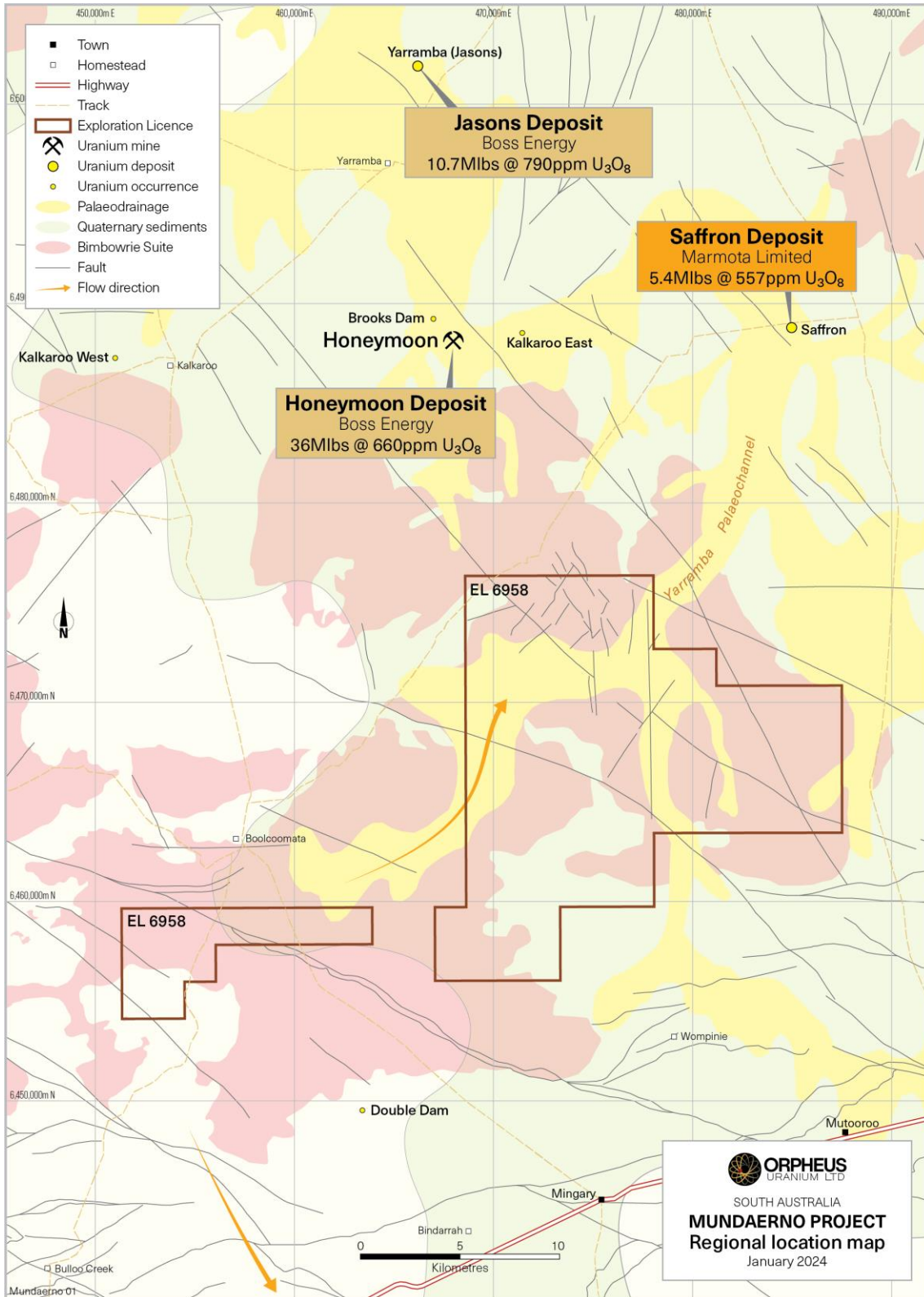


Figure 10: Mundaerno project location and nearby uranium occurrences, highlighting the headwaters of the Yarramba Palaeochannel directly underlain by Mesoproterozoic granitic basement, located just 12 km south of the Honeymoon Uranium Mine

## South Australia – Marree Project (ORP, 100%)

The Marree project is considered highly prospective for roll-front, sedimentary-hosted uranium mineralisation associated with Cenozoic and/or Permian palaeochannels. The region is situated approximately 70 kilometres northwest of the significantly radiogenic region of the Mount Painter Uranium Field host to the Mount Gee hard rock uranium deposits and Beverley sediment-hosted Cenozoic palaeochannel uranium deposits (Figure 11).

The mineralisation model at the Marree project comprises both sediment-hosted and silcrete-hosted uranium mineralisation within Cenozoic sediments including the Eocene Eyre Formation and Miocene Namba Formation, both of which are known to host uranium mineralisation at Honeymoon and Beverley deposits. Locally, at the nearby Jubilee prospect, uranium mineralisation is contained within silicified sandstone units of the Eyre Formation, at shallow depths of ~25 metres within a palaeochannel feature.

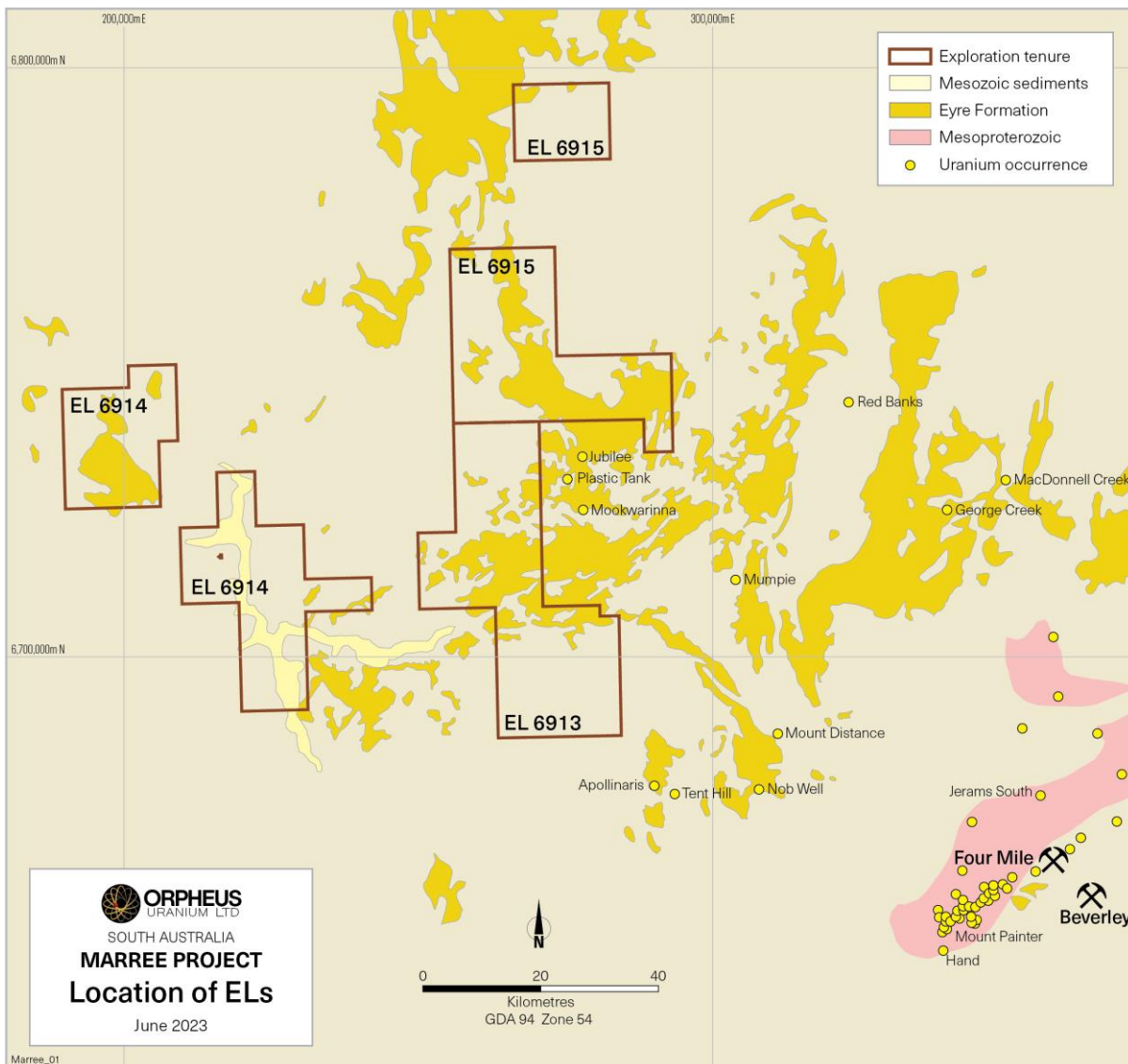


Figure 11: Marree project regional geology of the prospective Eyre Formation, with uranium deposits and occurrences



## Northern Territory – Mount Douglas Project (ORP, 100%)

The Mount Douglas project is located in the eastern flank of the Rum Jungle Mineral Field (RJMF) which was the first major uranium mining and processing centre in Australia. There are several uranium mineral occurrences in the Mount Douglas region, most of which are interpreted to be unconformity-style mineralisation which is the principal target in the project area.

The project area is largely covered by Paleoproterozoic sediments of the Mount Partridge Group (2,050 to 2,000 Ma) in the east, overlain by the South Alligator Group (2,000 to 1,860 Ma), in turn overlain by sediments of the Finnis River Group (1,860 to 1,850 Ma) to the west. The sediments comprise granite intrusions of the Cullen Batholith (1,850 to 1,800 Ma) (Figure 12).

The Mount Douglas area contains a fault-bound outlier of Middle Proterozoic arenite, considered an equivalent of settings associated with unconformity-style uranium mineralisation elsewhere in the Pine Creek Orogen. The project area features a 20km strike length of favourable geology (unconformity at the base of the Kombolgie Basal Conglomerate), uranium anomalism in surface samples and several areas of elevated radiometric responses that require further investigation. Up to 1,089ppm U has been returned from surface sampling of a haematitic ironstone band in the area.

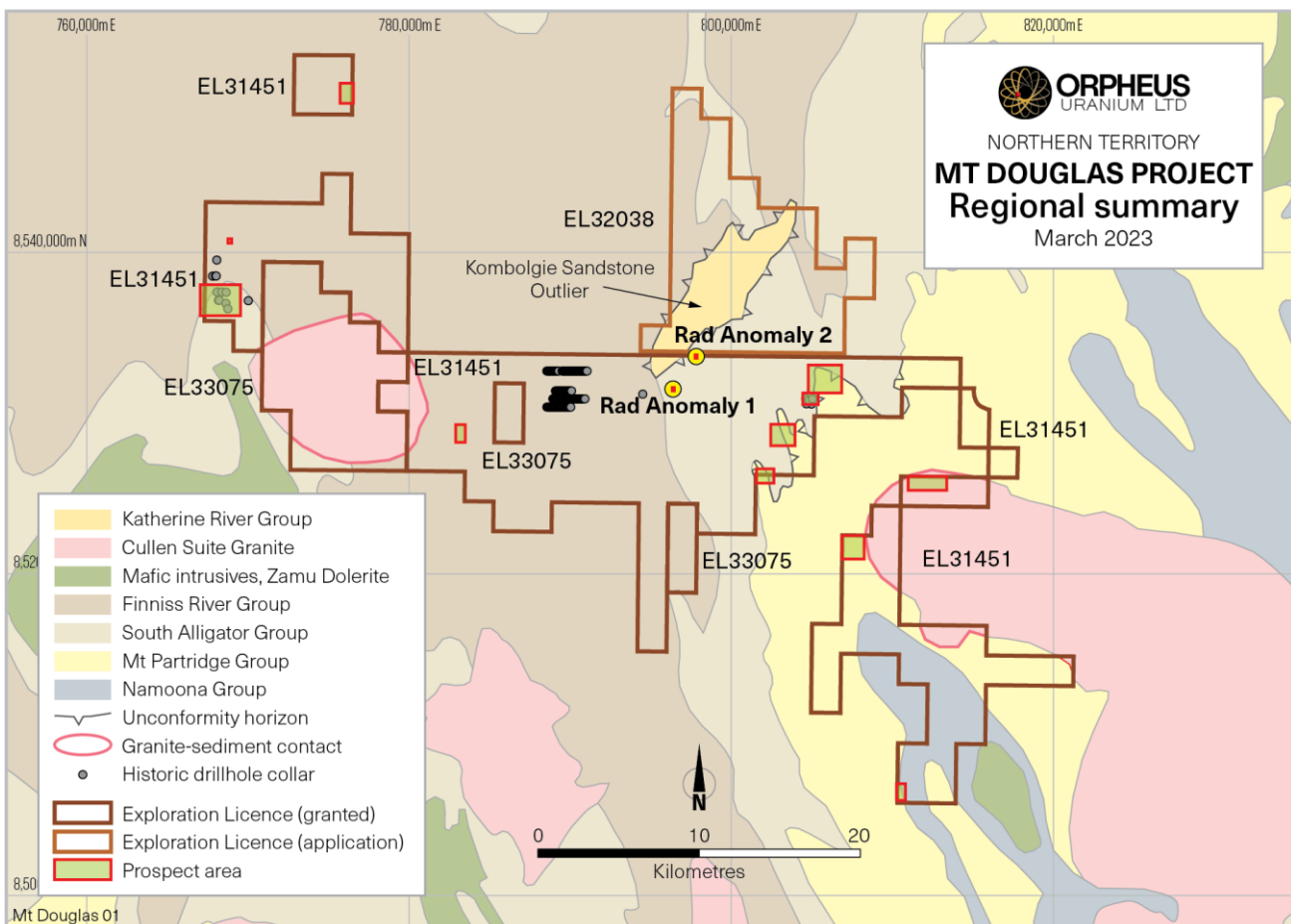


Figure 12: Mount Douglas project regional geology, with historic drill hole locations and identified prospect areas

## Other Assets

### South Australia – Murdie (Copper – ORP, 100%)

The Murdie project is located in South Australia near the eastern margin of the Gawler Craton. The project area covers 1,015km<sup>2</sup> of highly prospective Olympic Domain geology and includes more than 50 discrete gravity anomalies that are located immediately south and east of the Torrens project and east of the Carrapateena mine (Figure 13). These anomalies represent locations with significant volumes of high-density rock that could contain economic Iron-Oxide Copper-Gold (IOCG) deposits.

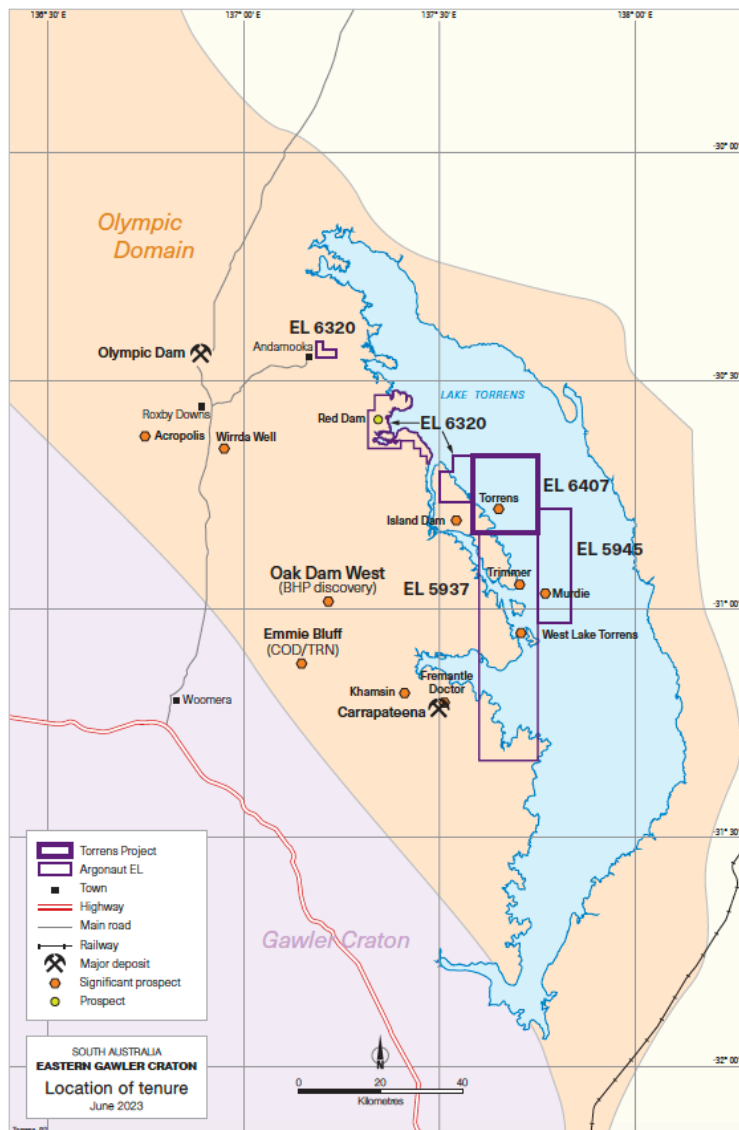


Figure 13: Lake Torrens exploration licences

## Exploration Authorisations

The Company holds all permits necessary to undertake exploration works at Murdie under the Mining Act.

## South Australia – Torrens Project (Copper – ORP, 100%)

Orpheus' 100% held subsidiary, Kelaray Pty Ltd holds 100% interest in the Torrens project in South Australia, subject to a 2.5% net smelter royalty, payable to Aeris Resources Ltd (ASX: AIS) on future production.

The Torrens project is located within 40km of BHP Group's Oak Dam copper discovery, 50km of OZ Minerals' Carrapateena copper-gold deposit and 75km from BHP's Olympic Dam mine. BHP's recent discovery at Oak Dam has confirmed the validity of the Torrens target and the copper endowment of the Eastern Gawler Craton.

### Torrens Anomaly

The Torrens anomaly is a coincident magnetic and gravity anomaly with a footprint larger than that of Olympic Dam. The anomaly is located at the Torrens Hinge Zone, a continent-scale zone of crustal weakness that appears to have been a conduit for mineralising fluids from the Earth's mantle.

Drilling at Torrens to date has confirmed the existence of a major IOCG mineralising system beneath several hundred metres of sedimentary cover.

Further drilling is required to intercept the modelled copper-gold mineralisation. In the event of a discovery, the Torrens anomaly has the scale to host a world-class copper-gold deposit.

## South Australia – Red Dam (Copper – ORP, 100%)

Orpheus holds exploration licence EL 6320 located adjacent to the Torrens Project (Figure 13). The 198 square kilometre licence area is in three parts and encompasses the Red Dam IOCG target, previously identified by WMC. The licence areas were relinquished by BHP prior to the announcement of the Oak Dam discovery.

Orpheus has assessed the relevant, historical drill core and conducted a ground gravity survey in 2020 to improve resolution for geophysical modelling and target generation.

## Western Australia – Higginsville (Lithium, Gold and Nickel – ORP, 80%)

Orpheus holds an 80% interest in exploration licence E 15/1489 which hosts:

- the Darson pegmatite swarm;
- the Amorphous gold deposit; and
- the Footes Find gold prospect.

## Corporate

### Name Change

On 21 February 2024, Orpheus announced the completion of the company name change from Argonaut Resources NL to Orpheus Uranium Limited and commenced trading on the ASX under the new code (ASX: ORP) on 22 February 2024.

### CEO Appointment

During the Quarter, the Company appointed Clinton Dubieniecki as Chief Executive Officer, to commence in late May 2024. Mr Dubieniecki has more than 15 years' experience within global businesses focussing on uranium, including two of Australia's licenced uranium operations.

Most recently, he has been Principal Geologist at Heathgate Resources, a wholly-owned private subsidiary of US-based General Atomics. Heathgate Resources operates the Four Mile Uranium Mine in South Australia and is owner/operator of the adjoining Beverley and Beverley North uranium operations.

### Zambian Projects

Subsequent to the end of the Quarter, the Company advised it had agreed terms with Prospect Resources Limited (Prospect) ASX: PSC) which will result in Orpheus withdrawing from the Lumwana West project in Zambia. Terms include

- Prospect to pay Orpheus A\$1.0 million in fully paid shares in partial reimbursement of prior exploration expenditure, along with three options to acquire ordinary shares for every four shares issues at 15cents per share, expiring three years after issue.
- Upon definition of a JORC-reportable Mineral resource exceeding 500,000 tonnes of contained copper metal, Prospect will also make a milestone payment of A\$2.5million to Orpheus.
- Orpheus to provide Prospect with all Mining data relevant to the project, and to withdraw its appeal application to the Mining Appeals Tribunal of Zambia in relation to the cancellation of the Zambian licence.

The Company will advise its strategy in respect of other early stage exploration licences in Zambia in due course.

### Frome Project – Acquisition Terms

Subsequent to the Quarter, Orpheus acquired 100% of Exploration Licence EL 6703, the Erudina licence. Total consideration is \$330,000, via the issue of ordinary fully paid Orpheus shares to that value. Orpheus Uranium will seek shareholder approval at a General Meeting of Shareholders to issue these shares. Orpheus also advises it has agreed with Groundwater Science to return 100% ownership in the Cummins project back to Groundwater Science. Cummins is in the southern part of Eyre Peninsula and is no longer a core focus of Orpheus.

## Exploration Costs

Exploration and Evaluation expenditure during the Quarter comprised:

	\$A'000
Geophysics	146
Heritage surveys	46
Field costs	12
Tenement expenditure	60
Total at 2.2 in Appendix 5B	264

Related party payments for the March 2024 Quarter totalled \$67,857.

There was no production or development expenditure during the March 2024 Quarter.

-END-

This announcement was approved for release by Mick Billing, Executive Chairman of Orpheus Uranium Limited.

Sections of information contained in this report 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 report of the matters based on this information in the form and context in which it appears.

### For further information please contact

#### About Orpheus Uranium

## EXECUTIVE CHAIRMAN

Mick Billing

E. [admin@orpheusuranium.com](mailto:admin@orpheusuranium.com)

## INVESTOR RELATIONS

Melissa Temptra

E. [melissa@nwrcommunications.com.au](mailto:melissa@nwrcommunications.com.au)

Orpheus Uranium Limited is an Australian Securities Exchange listed exploration company exploring for uranium in South Australia and the Northern Territory, both jurisdictions which allow uranium mining and processing.

**ORPHEUS URANIUM LIMITED**  
(previously Argonaut Resources NL)

**ASX: ORP** (previously ARE)  
[orpheusuranium.com](http://orpheusuranium.com)

#### CAPITAL STRUCTURE

**Issued shares:** 189.8 M  
**Unlisted options:** 11 M  
**Cash on hand:** \$4.8 M

#### DIRECTORS

**Mick Billing** -Executive Chairman  
**Simon Mitchell** -Non-Exec Director  
**Richard Willson** - Non-Exec Director & Company Secretary  
**Todd Williams** - Non-Exec Director

#### URANIUM PROJECTS

Frome, SA 100%  
Radium Hill South, SA 100%  
Mundaerno, SA 100%  
Woolshed, SA 100%  
Marree, SA 100%  
Mount Douglas, NT 100%  
Ranger NE, NT 100%  
T-Bone, NT 100%  
Woolner, Marrakai, NT 100%

#### COPPER PROJECTS

Murdie, SA 100%  
Torrens, SA 100%  
Red Dam, SA 100%

#### LITHIUM & GOLD PROJECTS

Higginsville, WA 80%

## Tenement Schedule

Table 1: Summary of mining tenements

SOUTH AUSTRALIAN MINERAL EXPLORATION LICENCES						
Tenement	Granted	Expiry	Area (km <sup>2</sup> )	Locality	Licensee	Interest
EL 6569	18/10/2020	17/10/2025	104	Sandstone	Coombedown Resources Pty Ltd	10% <sup>1</sup>
EL 5998	21/05/2017	20/05/2028	33	Campfire Bore	Coombedown Resources Pty Ltd	10% <sup>1</sup>
EL 6199 <sup>2</sup>	04/06/2018	03/06/2023	27	Myrtle Springs	Kelaray Pty Ltd	100%
EL 6407	18/08/2019	17/08/2024	295	Lake Torrens	Kelaray Pty Ltd	100%
EL 5937	30/03/2017	29/03/2028	794	West Lake Torrens	Kelaray Pty Ltd	100%
EL 5945	20/04/2017	19/04/2028	221	Murdie	Kelaray Pty Ltd	100%
EL 6320	28/02/2019	27/02/2024	198	Andamooka Station	Kelaray Pty Ltd	100%
EL 6554	07/12/2020	06/12/2025	960	Frome Downs	Trachre Pty Ltd	100%
EL 6555	07/12/2020	06/12/2025	947	Curnamona	Trachre Pty Ltd	100%
EL 6624 <sup>3</sup>	23/07/2021	22/07/2027	952	Cummins	Trachre Pty Ltd	100%
EL 6703	3/02/2022	2/02/2028	987	Erudina	Trachre Pty Ltd	100%
EL 6900	19/01/2023	18/01/2029	143	Billeroo	Trachre Pty Ltd	100%
EL 6913	9/06/2023	8/06/2029	998	Mundowdna	Trachre Pty Ltd	100%
EL 6914	9/06/2023	8/06/2029	990	Muloorina	Trachre Pty Ltd	100%
EL 6915	9/06/2023	8/06/2029	978	Clayton	Trachre Pty Ltd	100%
EL 6923	30/08/2023	29/08/2029	977	Lake Frome	Kelaray Pty Ltd	100%

QUEENSLAND MINING LEASE						
Tenement	Granted	Expiry	Area (km <sup>2</sup> )	Locality	Licensee	Interest
ML 5631	16/05/1974	31/05/2026	0.32	Kroombit	Kelaray Pty Ltd	100%

QUEENSLAND MINERAL DEVELOPMENT LICENCE						
Tenement	Granted	Expiry	Area (km <sup>2</sup> )	Locality	Licensee	Interest
MDL 2002	03/08/2016	31/08/2026	0.64	Kroombit	Kelaray Pty Ltd	100%

ZAMBIAN LARGE SCALE EXPLORATION LICENCES						
Tenement	Granted	Expiry	Area (km <sup>2</sup> )	Locality	Licensee	Interest
23232-HQ-LEL <sup>2</sup>	10/04/2019	9/04/2023	226	North-Western Province	Sunrise Exploration and Mining Limited	90%
23474-HQ-LEL <sup>2</sup>	18/12/2018	17/12/2022	41.58	North-Western Province	Sunrise Exploration and Mining Limited	90%

ZAMBIAN SMALL SCALE EXPLORATION LICENCE						
Tenement	Granted	Expiry	Area (km <sup>2</sup> )	Locality	Licensee	Interest
26458-HQ-SEL	10/06/2020	09/06/2024	9.72	North-Western Province	Sunrise Exploration and Mining Limited	90%

WESTERN AUSTRALIAN MINERAL EXPLORATION LICENCE						
Tenement	Granted	Expiry	Area (km <sup>2</sup> )	Locality	Licensee	Interest
E15/1489	14/08/2017	13/08/2027	20.94	Higginsville	Orpheus Uranium Limited	80%

NORTHERN TERRITORY MINERAL EXPLORATION LICENCES						
Tenement	Granted	Expiry	Area (km <sup>2</sup> )	Locality	Licensee	Interest
EL 31451	8/09/2017	7/09/2025	484.52	Mount Douglas	Trachre Pty Ltd	100%
EL 33075	3/01/2023	2/01/2029	103.63	Mount Douglas (Ban Ban)	Trachre Pty Ltd	100%
EL 33088	3/01/2023	2/01/2029	473.23	Woolner	Trachre Pty Ltd	100%
EL 33089	3/01/2023	2/01/2029	458.81	Marrakai	Trachre Pty Ltd	100%

NORTHERN TERRITORY MINERAL EXPLORATION LICENCE APPLICATIONS						
Tenement	Granted	Expiry	Area (km <sup>2</sup> )	Locality	Licensee	Interest
ELA 32445	25/06/2020	-	230.24	T-Bone	Trachre Pty Ltd	100%
ELA 32446	25/06/2020	-	63.71	Ranger NE	Trachre Pty Ltd	100%
ELA 32038	22/11/2018	-	127.49	Mount Douglas (Mary River)	Trachre Pty Ltd	100%

There was one tenement acquired in the March 2024 Quarter.

Table 2: Summary of mining tenements acquired in Quarter

SOUTH AUSTRALIAN MINERAL EXPLORATION LICENCE APPLICATION						
Tenement	Applied	Expiry	Area (km <sup>2</sup> )	Locality	Licensee	Interest
ELA 2024/00005	29/01/2024	-	87	Woolshed	Trachre Pty Ltd	100%

There was one tenement surrendered in the March 2024 Quarter.

Table 3: Summary of mining tenements surrendered in Quarter

ZAMBIAN LARGE SCALE EXPLORATION LICENCE						
Tenement	Granted	Expiry	Area (km <sup>2</sup> )	Locality	Licensee	Interest
22399-HQ-LEL <sup>4</sup>	29/12/2017	28/12/2021	521	North-Western Province	Mwombezi Resources Ltd	90%

<sup>1</sup> Kelaray holds a 33% interest in Coombedown Resources Pty. Ltd.

<sup>2</sup> Undergoing renewal.

<sup>3</sup> Licence returned to Groundwater Science subsequent to the Quarter.

<sup>4</sup> Licence was subject to litigation.