# Murdie Exploration Program

## Six Monthly Progress Report

## for the period to 28 December 2021

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# Introduction

Kelaray Pty Ltd (*Kelaray or the Company*), a wholly owned subsidiary of Argonaut Resources NL, holds two South Australian exploration licences, EL5937 and EL5945 (Figure 1) which are prospective for Olympic Dam-style copper deposits. The licences cover an area of 1,015 square kilometres and are located immediately south and east of the Torrens joint venture project and east of the Carrapateena mine.

The licence areas cover a confirmed copper target in an area known as Murdie as well as a second anomaly at West Lake Torrens. There are several known residual gravity targets within the licence areas. These residual gravity targets are the subject of exploration interest.

A reported Aboriginal heritage site with the reference number 6436-7237 covers all of Lake Torrens plus a 500m zone around the lake (*the Lake Torrens Site Card*). Part of the area of EL5937 and all of area of EL5945 lies within the boundary of the Lake Torrens Site Card.

To conduct exploration drilling in those parts of EL5937 and EL5945 that are covered by the Lake Torrens Site Card, Kelaray requires authorisation under section 23 of the Aboriginal Heritage Act (the *AHA*).

# Section 23 Authorisation

On 24 February 2020, Kelaray applied under section 23 of the AHA for authorisation to conduct mineral exploration. An authorisation was granted by the South Australian Government on 29 December 2020 (*Authorisation*). The Authorisation contained conditions, including a condition to report every six months to seven Aboriginal entities. These entities were specified in the Authorisation.

This report is in satisfaction of that condition for the period from 29 June 2021 to 28 December 2021.

# Current and Future Exploration Drilling

## Timing of Exploration Drilling

### Drilling During the Previous Period

A drilling rig arrived on site on 15 March 2021. Drilling of the first drill hole, WLTD001, commenced on 22 March 2021. Kelaray was asked to delay the commencement of drilling until after a significant funeral was held on 19 March 2021 in Port Augusta. Kelaray complied with the request.

#### *Drill Hole WLTD001*

Drilling at WLTD001 commenced on 22 March 2021. It took 45 days to complete the hole to a depth of 924m. Drilling concluded on 5 May 2021. Between 6 May and 19 May 2021, the drilling equipment and protective padding was moved from the WLTD001 site to the WLTD002 site.

#### *Drill Hole WLTD002*

Drilling at WLTD002 commenced on 20 May 2021 and concluded on 17 June 2021. WLTD002 took 29 days to drill to a depth of 854m. Between 18 June 2021 and the time of writing, the drilling equipment and protective padding was being removed from the WLTD002 site in preparation for a move to the next drill location.

### Drilling During the Current Period

No drilling was undertaken during the current reporting period.

Recent rain events caused lake surface wetness and minor pooling of water in certain areas of Lake Torrens during July 2021. Near-surface geotechnical conditions became unsuitable for accessing drilling areas via protective matting.

#### *Planned Third Drill Hole*

It was anticipated that the drilling of a third hole would commence during the first two weeks of July 2021. Equipment was transported to a site adjacent to the south-eastern corner of Andamooka Island however access to this this site was hampered during July 2021 by:

- several rain events which affected access tracks to southern Andamooka Island,
- related wetness of the surface and subsurface of Lake Torrens, and
- impaired availability of earthmoving equipment during the South Australian COVID lockdown.

Kelaray elected to suspend drilling operations temporarily whilst it reconsiders access methodologies under its various authorisations.

#### *Demobilisation from Site*

Drilling equipment was demobilised from site due to the access impediments mentioned above. Demobilisation of drilling equipment was completed by early August 2021.

### Future Drilling

Kelaray is in the process of conducting a review of all sites within EL5937 and EL5945 that are prospective for Olympic Dam-style copper deposits. This review will prioritise drilling targets for possible, future drilling. The review is scheduled for completion in February 2022.

The review is considering drilling targets that are accessible by either Accessways or helicopter. It is not anticipated that future drilling will occur before March 2022.

## Nature of Exploration Drilling (including documentation of ground disturbing works)

Deep diamond drilling is required to intercept geological basement at depths of >500 metres. It is anticipated that drillholes will be a minimum of 700 metres and a maximum of 1,500 metres in depth.

Drilling will be undertaken in such a way as to:

- minimise the footprint of impact; and
- reduce the amount of scouring and disturbance to the salt crust as much as practicable.

No vegetation clearing has occurred as a result of drill site preparation.

### Drill Site Access

Access to drill sites on the Lake Torrens surface is authorised to be undertaken either of two methods: 1) an Accessway constructed using protective matting; or 2) by helicopter.

#### *Accessway*

Access to a drilling site on Lake Torrens via low ground pressure vehicles and protective matting involves:

- baseline geotechnical investigations to establish the optimum access path for each drill hole;
- the installation of temporary protective geofabric and matting from the shoreline to the drill site (the *Accessway*) for the transport of equipment, consumables, drill core, cuttings and personnel; and
- drill site preparation using protective geofabric, bunding and heavy-duty, interlocking protective matting.

*Photo 1: An example of drilling under the Murdie Exploration Program (drill hole WLTD002) utilising protective platform and an Accessway, May 2021.*

### *Helicopter Supported*

Access to a drilling site on Lake Torrens via helicopter involves:

- operational movements to and from the drill site by helicopter;
- use of a heli-portable drilling rig and other heli-portable equipment;
- the use of custom-made pontoons that hold the drilling rig and provide workspace for drillers; and
- water pipeline laid on the lake surface.

*Photo 2: An example of helicopter supported drilling at the neighbouring Torrens project, January 2019.*

## Drill Site

### *Drill Site Protection*

A fit-for purpose, custom built, protective drill platform system *or* custom-made pontoon system is used at each drill site. Both systems spread the weight of heavy equipment widely to reduce the exertion of pressure on the lake surface.

Drilling equipment used on the protective drill-pad includes: drilling rig, drilling rods, water tanks, solids recovery unit, transportable diesel fuel tanks, drill consumables, portable toilet, lighting, and shelter shed/crib room.

Water tanks and the solids recovery unit are located on the protective platform or pontoons which removes the need for the excavation of sumps on the lake surface. All drill fluids and spoil material are captured at the drill collar and pumped through the solids recovery unit to enable water and fluid recycling, whilst capturing sand, silt and spoils. Solid spoils are collected in sealed bulka-bags and transported off the site at regular intervals for disposal. Spoils are stored temporarily at a laydown area before being transported and disposed at a licensed waste facility.

*Photo 3: The WLTD001 drill site: drilling equipment on protective platform (heavy duty matting) system near the shore of Lake Torrens, March 2021.*

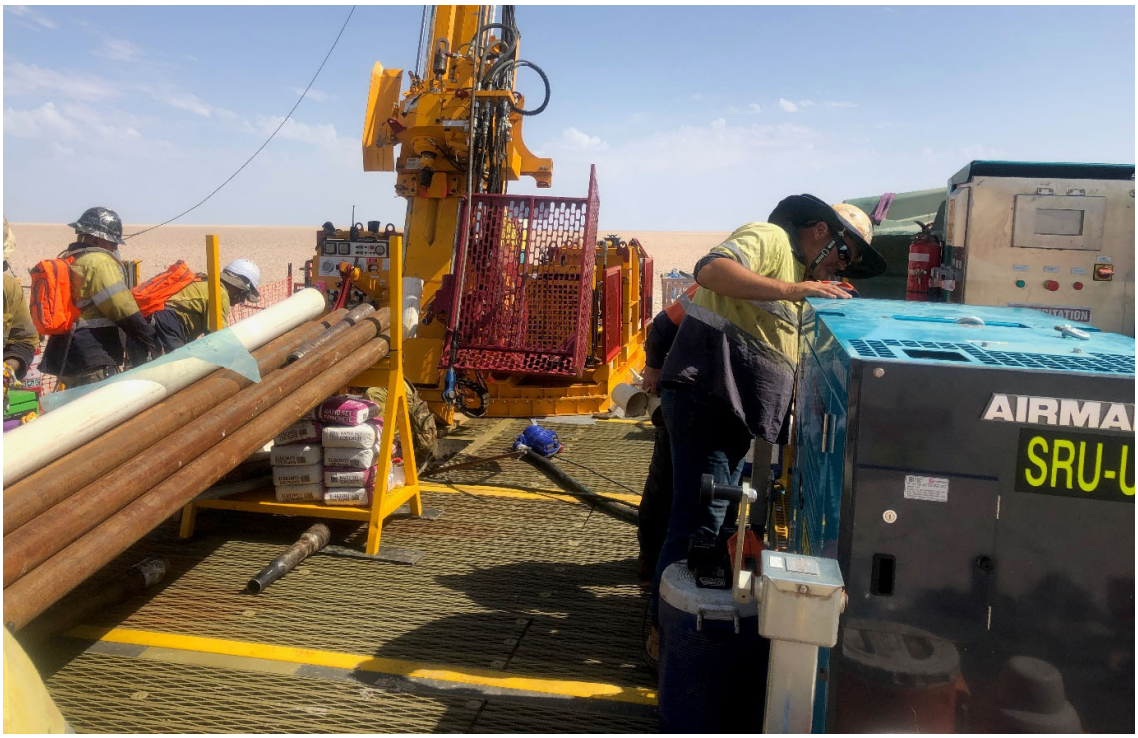


*Photo 4: An example of protective pontoons in use during heli-portable drilling at the neighbouring Torrens project, January 2019.*

## Drilling

A track-mounted diamond drilling rig such as a Sandvik DE740 drilling rig (Photos 1, 3 and 5) may be used to conduct future drilling drilling utilising an Accessway. A heli-portable diamond drilling rig such as a EDM 1800 (Photos 2 and 4) may be utilised for future helicopter supported drilling.

The top of each drill hole is collared using steel and/or PVC casing. The casing is grouted between the outside of the casing and the hole wall using cement. Grouting allows the drillers to easily seal the drill hole if artesian groundwater is intercepted.

The drill core (i.e. the rock sample) is acquired by conventional diamond drilling. Core sizes are HQ (approximately 75mm core) and NQ (Approximately 50mm core). The core is retrieved from a core barrel by a wireline during the drilling process and is collected by drillers in core trays. Core trays are transported from the drill site to the core storage area near the camp for logging.

Drilling water supply is by a water pipeline which is laid across the lake surface from a shore-based header tank and pumped out to the drill site.

Diesel and other drilling consumables are delivered to the drill site in bunded fuel pods.

Drill cuttings, core, fuel and other equipment or goods to and from the drill site as required during drilling and remedial activities.

*Photo 5: WLTD001 showing drilling equipment, protective (matting) platform and a short Accessway during drilling at Murdie, April 2021.*

## Rehabilitation

Progressive drilling and rehabilitation require that:

- each drillhole site is remediated;
- the drillhole is decommissioned and capped; and
- all equipment is removed prior to commencement of drilling at a new drill site.

South Australian State Government drill hole decommissioning and remediation procedures were followed. Monitoring of drill site locations is being progressively undertaken by the Department of Energy and Mines (*DEM*) and the Company.

The drill site for hole WLTD001 is close to the shoreline of Lake Torrens. The hole's collar is approximately 60m from the high-water mark (Photos 6 and 7). The protective platform performed well in minimising the impact of the drilling activities little surface indentation was caused by activities.

Some light rolling and plate compacting of disturbed areas was undertaken at the pictured site (Photos 6 and 7) which was effective in flatting ridges and smoothing imprints of protective mats. The initial assessment was that natural renewal of the salt crust was occurring and that further active intervention may be counterproductive. Time should be allowed for the natural regeneration of the salt crust to occur before assessing whether any further active remediation is desirable.

The Accessways were lightly racked and levelled. The WLTD002 Accessway will be subject to a further active rehabilitation process. This Accessway will be opportunistically rolled approximately two weeks after a moderate rain event when the surface clays are in a plastic state.

*Photo 6: WLTD001 drill site after drilling and shortly after removal of protective padding, 31 May 2021 (Photo courtesy of SA Dept. for Energy and Mines)*

*Photo 7: WLTD001 following rehabilitation and following a rain event, October 2021.*

*Photo 8: WLTD002 drill site after drilling and shortly after removal of protective padding, October 2021.*

## Location of Exploration Drilling

The Murdie Project is located approximately 180 km north of Port Augusta and 70 km east-southeast of Roxby Downs, comprising two exploration licences that are contiguous with the Torrens joint venture project (EL6407), bounded as follows:

**EL5937 (West Lake Torrens):** commencing at a point being the intersection of latitude -30.831864 and longitude 137.601318, thence east to longitude 137.751317, south to latitude 137.751317, west to longitude 137.601325 and north to the point of commencement.

The total area is approximately 794km$^2$ or 79,400 ha, of which approximately 57% (453km$^2$) is over Lake Torrens National Park lands and 43% (341 km$^2$) is located within the Bosworth Station Pastoral Lease and the Pernatty Station Pastoral Lease.

**EL5945 (Murdie):** commencing at a point being the intersection of latitude -30.781862 and longitude 137.751316, thence east to longitude 137.834648, south to latitude -31.031863, west to longitude 137.751319 and north to the point of commencement.

The total area is approximately 221 km$^2$ or 22,100 ha, of which 100% is over a portion of Lake Torrens National Park.

This progress report covers exploration activities that are within the Authorisation Area.

## Completed Drilling

The location of the drilling completed in the previous period is described as follows:

- Both WLTD001 and WLTD002 were drilled on the surface of Lake Torrens nearby to the western shoreline, to the north of Carrapateena Inlet.
- In terms of pastoral geography, the drill holes were drilled near the south-eastern edge of Carrapateena paddock on Bosworth pastoral lease. Specifically, the holes were near historic water bores named Carrapateena Wells – this is the nearest geographical landmark commonly found on maps.
- The drill holes were within the Lake Torrens national park, near the park's western boundary.

The location of holes drilled to date is shown below.

| Drill Hole | Easting* | Northing* | Dip | Azimuth | Total Depth |
|---|---|---|---|---|---|
| WLTD001 | 757,090mE | 6,554,800mN | -90 degrees | N/A | 924m |
| WLTD002 | 754,770mE | 6,551,950mN | -90 degrees | N/A | 854m |

* GDA94, MGA Zone 53

## Future Drilling

As mentioned above, Kelaray is in the process of conducting a review of all sites within EL5937 and EL5945 that are prospective for Olympic Dam-style copper deposits. This view will result in a technical prioritisation of drilling targets. The outcome of the review is not currently known therefore the location of potential future drill sites is unclear at eth date of this report.

# Nature and Status of Camp and Access Tracks

## Camp

The camp was located at Bosworth homestead, outside the Authorisation area and is not addressed further in this Report.

## Access Tracks (including documentation of ground disturbing works)

### Gazetted Roads

The main access to the Murdie Project is from the Roxby Downs Highway at the Arcoona Station turnoff and then via a gazetted road called Bosworth Road to Bosworth homestead.

### Station Tracks

Existing station tracks within Bosworth pastoral lease are used by Kelaray to access exploration activities.

- WLTD001 and WLTD002
    - Existing track extending from Bosworth homestead southeast toward Crystal Dam then Smith Dam then south to Carrapateena Wells.
    - Carrapateena Wells fence line track which runs north-north-east along a fence from Carrapateena Wells.
- Planned Third Drill Hole
    - Existing track extending from Bosworth homestead, north-west along Station Creek, across the Trimmer Inlet causeway to Andamooka Island. The track extends in a southerly direction to the southern tip of Andamooka Island avoiding the area of Crombie Ridge.

Several significant tracks and fences on Bosworth Station were upgraded recently by the pastoral company that bought the Bosworth pastoral lease in April 2020. Kelaray's activity has damaged these tracks in places and the Company contracted the pastoralist to carry out repairs.

### Temporary Tracks

During the previous reporting period temporary tracks between the Carrapateena Wells fence line and the lake edge were formed, without the use of earthmoving or other heavy equipment, in selected locations by repeated vehicle use during the previous reporting period. These temporary tracks connected the fence line track to the Accessways at WLTD001 and WLTD002.

The temporary tracks to the WLTD001 Accessway was rehabilitated using hand tools following demobilisation from that site. The temporary track to WLTD002 will be used for final Accessway rehabilitation but will be similarly rehabilitated when appropriate.

# Proposed Transition to Phases B and/or C of the Exploration Program

Kelaray is currently in Phase A of the exploration program.

Kelaray does not currently have plans to proceed to Phase B or Phase C.

# Aboriginal Heritage Discoveries Made or Managed

Kelaray staff and contractors have not made any Aboriginal heritage discoveries since the commencement of exploration works under the Authorisation.