

# CONSULTATION INFORMATION PACKAGE

Application for authorisation under the *Aboriginal Heritage Act 1988 (SA)*

## Kelaray Pty Ltd – Lake Torrens Murdie Exploration Program

- Applicant:** Kelaray Pty Ltd
- Application Type:** Authorisation under section 23 of the *Aboriginal Heritage Act 1988 (SA)*
- Application Area:** The area within Exploration Licences 5937 and 5945 bounded in blue on the map at Figure 1, which includes a portion of Lake Torrens and a portion of Andamooka Island.
- Proposed Activities:** Gravity in-fill surveys; deep diamond exploration drilling; upgrading existing access tracks; creation of new access tracks; drilling for water bores; construction of a new exploration camp on Andamooka Island; vegetation clearing; and the construction of multiple lake access points.

*Helicopter-assisted 'offshore' exploration drilling (image courtesy of Applicant)*



## INTRODUCTION

The Premier of South Australia, as Minister responsible for the *Aboriginal Heritage Act 1988 (SA)* (Act), has received an application for authorisation under section 23 of the Act from Kelaray Pty Ltd (Applicant). The Applicant has sought the authorisation to enable it to assess the potential for economic mineral deposits, primarily focused on iron oxide copper-gold mineralisation in the northern portion of Lake Torrens, as part of its Lake Torrens Murdie Exploration Program (Exploration Program).

The authorisation is sought to cover the entirety of Exploration Licence (EL) 5945 (Murdie), as well as the part of EL 5937 (West Lake Torrens) that intersects the boundary of the Lake Torrens Aboriginal site (6436-7237) (together the Application Area). The Application Area includes part of the Lake Torrens lake surface, a southern portion of Andamooka Island and a 500-metre wide section of the Lake Torrens shoreline that forms part of the Lake Torrens Aboriginal site. A map showing the Application Area bounded in blue is at Figure 1 and Attachment 1. The activities associated with the Exploration Program include gravity in-fill surveys; deep diamond exploration drilling; upgrading existing access tracks; creation of new access tracks; drilling for water bores; establishment of a temporary exploration camp in the southern part of Andamooka Island, away from Crombie Ridge; vegetation clearing; the construction of multiple lake access points; as well as associated rehabilitation works.

The Applicant, as 100% holder of EL 5937 and EL 5945, seeks authorisation under section 23 of the Act to authorise damage, disturbance and/or interference with Aboriginal sites, objects and/or remains that may occur as a result of the Exploration Program activities.

The Applicant's proposed Exploration Program activities may cover EL 5937 and EL 5945 in their entirety. However, the area for which the Applicant has sought section 23 authorisation only covers the areas within those tenements that overlap the Lake Torrens Aboriginal site. The onshore exploration activities proposed outside of the Application Area but within the Kokatha Aboriginal Corporation RNTBC (KAC) native title determination area (KAC Determination Area), will be conducted under a native title mining agreement, excluding low-impact exploration activities, which may be undertaken without a native title mining agreement in accordance with the *Mining Act 1971 (SA)* (Mining Act).

The Aboriginal Heritage Act makes it an offence to damage, disturb or interfere with Aboriginal sites, objects or remains without authorisation from the Premier. Prior to considering whether to grant an authorisation, section 13 of the Act requires the Premier to understand and consider the views of a range of interested Aboriginal parties. Aboriginal Affairs and Reconciliation (AAR) conducts this consultation on the Premier's behalf, seeking the views of Traditional Owners and the State Aboriginal Heritage Committee (Committee), as well as other Aboriginal parties that may have an interest in the matter.

### **Application Area**

The Application Area measures approximately 793.6 km<sup>2</sup> in total area. The nearest towns are Andamooka (50 kilometres northwest), Roxby Downs (70 kilometres west-northwest) and Woomera (80 kilometres southwest).

Lake Torrens is the second largest salt lake in Australia, and its shoreline forms the Lake Torrens National Park boundary. The lake is an endorheic saline rift lake, measuring approximately 5,700 km<sup>2</sup> in total area, which exists in the same rift valley that includes Spencer Gulf to the south. The lake measures approximately 240 km in length and 30 km in average width. The surface of the lake is typically dry.

EL 5937 flanks a portion of the western boundary of Lake Torrens and encompasses portions of the Arcoona Tablelands and Andamooka Island (onshore) and portions of Trimmer Inlet, Carrapateena Inlet, Lake Torrens and three small islands (offshore), including Murdie Island. EL 5945 is situated entirely within the offshore portion of Lake Torrens.

The activities proposed by the Applicant for which authorisation is sought, and which are described in detail below, will be conducted across three program areas:

- **Nearshore Program Area:** the area of the Lake Torrens lakebed extending up to 500 metres from the lake's shoreline towards the middle of the lake
- **Offshore Program Area:** all areas of the Lake Torrens lakebed that are more than 500 metres from the Lake Torrens shoreline, including Murdie Island and any other smaller islands on the lake
- **Onshore Program Area:** the area of land extending 500 metres inland from the lake's shoreline and the southern portion of Andamooka Island.

### **Known Aboriginal Heritage within the Application Area**

The Central Archive, which includes the Register of Aboriginal Sites and Objects, contains a record for one Aboriginal site within the Application Area. This site, Central Archive site 6436-7237, encompasses the entirety of Lake Torrens and includes a 500-metre wide area inland from the lake's shoreline. Site 6436-7237 is recorded on the Central Archive as a site of significance according to Aboriginal tradition and anthropology. Information within the site card was recorded from Kokatha informants, and relates to anthropological creation stories that are restricted to men only. Accordingly, AAR holds this information on the Central Archive in confidence on behalf of the site card informants.

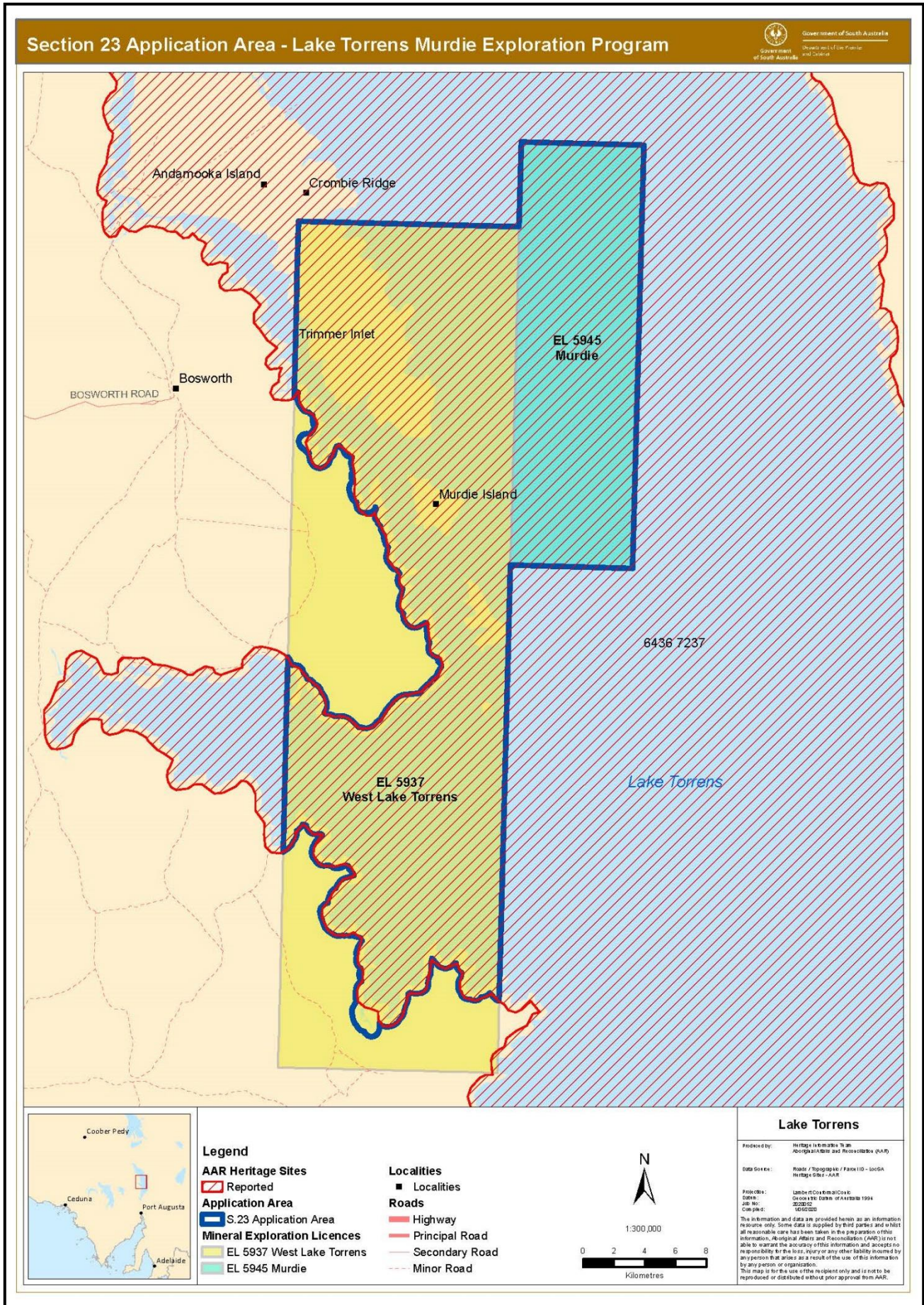
As the Central Archive is a non-exhaustive record of Aboriginal heritage across the state, the Application Area may also contain other Aboriginal sites for which records do not currently exist.

The Application Area and the surrounding region has been subject to a number of Aboriginal heritage surveys with various Aboriginal groups, including Kokatha, Barngarla, Kuyani and Adnyamathanha since at least the early 1980s. The Central Archive contains a number of Aboriginal heritage survey reports, work area clearance reports and agreements relating to Lake Torrens and its surrounds.

Owing to the confidentiality restrictions of the Central Archive, AAR did not provide the exact spatial boundary of 6436-7237 to the Applicant. As such, the Applicant has instead sought to match its Application Area to the boundary of the Lake Torrens waterbody, using 250,000 scale topographic maps of the area. For this reason, the Application Area does not precisely match the boundary of site 6436-7237 in Figures 1 and 3. Nevertheless, the Applicant advises that the area over which it has sought authorisation comprises the entirety of EL 5945 and the part of EL 5937 that intersects the Lake Torrens Aboriginal site (6436-7237).



Figure 1 – Map showing the Application Area and relevant Exploration Licences in relation to Lake Torrens Aboriginal site 6436-7237



## **Engagement with Aboriginal organisations and Traditional Owners**

The Applicant advises that it has a 20-year history of engagement with Aboriginal groups and individuals claiming traditional interests in areas on and around Lake Torrens. Prior to the Applicant's previous joint application for authorisation with Straits Exploration (Australia) Pty Ltd in 2017, the Applicant commissioned a number of clearance surveys for the neighbouring 'Torrens Project' on EL 5614 (now EL 6407), with various Aboriginal groups, including Kokatha, Barngarla and Kuyani.

For its current section 23 authorisation application, the Applicant conducted separate on-site consultation meetings with representatives of Kokatha, Kuyani and Adnyamathanha peoples in 2019. Further off-site consultation has been undertaken by the Applicant with representatives of the Kokatha, Barngarla, Kuyani and Adnyamathanha.

The Applicant advises that, in the event authorisation under the Act is granted for the Exploration Program, it will engage KAC to conduct on-ground heritage inspections of those proposed lake access zones within the KAC Determination Area which have not been inspected by KAC to date, to ensure that Aboriginal heritage is avoided where possible and otherwise appropriately managed.

## **Prior section 23 authorisation – 2018 Torrens Project**

On 15 February 2018, the former Minister for Aboriginal Affairs and Reconciliation granted an authorisation under section 23 of the Act to the Applicant to undertake the 'Torrens Project' on then EL 5614 (now EL 6407), located immediately north of the Application Area. That authorisation allowed the Applicant to drill up to 70 deep diamond drill holes, over a 120 km<sup>2</sup> area of Lake Torrens.

## **Scope of Authorisation**

The Applicant seeks a section 23 authorisation that extends to:

- itself
  - any subsequent licensees of the Application Area or any part of it
  - employees, agents, advisors, contractors and subcontractors of the above parties,
- to carry out the Exploration Program, as this is described below.

The Applicant has requested that the authorisation extend to activities that are ancillary to or necessary for the safe conduct of the Exploration Program, or to meet statutory compliance obligations associated with Exploration Program (Ancillary Activities).

A list of the types of activity which the Applicant considers Ancillary Activities, and for which it seeks authority as part of the Exploration Program, is described later in this document.

The Applicant has requested that the Premier grant the section 23 authorisation to it as well as others, defined as, the holder, from time to time, (as authorised under the Mining Act) of:

- a) any subsequent licences granted (in a future renewed or re-granted EL) in respect of the whole or any part of the land the subject of EL 5937 and EL 5945
- b) any approved successor in title to the Applicant's exploration rights under the Mining Act, in respect of the Application Area.



## **Land tenure status**

### **Onshore and Nearshore Program Areas**

The Applicant advises that the Andamooka Island portion of the Onshore Program Area, and the Offshore and Nearshore Program Areas, are not currently covered by a registered native title grant or claim. The mainland Onshore Program Area, which includes a portion of the Application Area, is covered by the KAC Determination Area.

The Onshore Program Area is also covered by Bosworth and Pernatty pastoral leases. Andamooka Island, which is also included within the Onshore Program Area, is covered by the Andamooka Island pastoral lease. The Applicant has executed a land access agreement with the Bosworth and Andamooka Island pastoral lessees. The Applicant will continue to work with relevant leaseholders regarding access arrangements as required.

### **Offshore Program Areas**

Lake Torrens was proclaimed as a National Park in 1991 under the provisions of the *National Parks and Wildlife Act 1972* (SA). The Department for Environment and Water (DEW) is the managing authority for the Lake Torrens National Park, while the landholder is the Minister for Environment and Water. The Applicant received approval from DEW and National Parks and Wildlife Services for its Exploration Program in January 2020.

## **SCOPE OF PROPOSED ACTIVITIES**

The aim of the Exploration Program is to assess the potential for mineral occurrences, through in-fill gravity surveys and deep diamond drilling activities. The Exploration Program may take a period of years to complete (possibly three or more, depending on the success of each phased program).

The Exploration Program, as described by the Applicant, is intended to be conducted in five 'project development' phases, which are themselves grouped into the following three separate 'drilling phases':

- Exploration Drilling (Phase A)
- Resource Definition (Phase B)
- Reserve Definition (Phase C).

The Applicant advises that the exact content and nature of each phase will be highly dependent upon the findings of each preceding phase. Proposed activities associated with Exploration Drilling (Phase A) are discussed in detail further in this consultation information package.

The indicative drilling, equipment and personnel required to complete each phase is set out in Table 1. For each phase, an estimate has been provided (as a potential range) of the number of:

- a) drill holes to be completed
- b) drill rigs which may need to be located on site at any one time
- c) personnel who may need to be engaged.

*Table 1 - A table showing the works proposed and the stages in which they will occur (courtesy of the Applicant)*

<b>Drilling Phase</b>	<b>Project Development Phase</b>	<b>Drill Holes</b>	<b>Drill Rigs</b>	<b>Personnel</b>
A Exploration Drilling	1 Exploration	10-30	1-3	10-30
	2 Advanced Exploration	40-200	1-5	10-50
B Resource Definition	3 Scoping Study	100-800	4-30	30-200
C Reserve Definition	4 Preliminary Feasibility	10-100	1-20	10-150
	5 Feasibility	10-100	1-20	10-150

In total, up to 1,230 holes are proposed to be drilled as part of the Exploration Program within the Application Area across all three phases. As detailed below, this number includes any water bores that may also be required to support the proposed exploration activities.

The Applicant advises that Phases A through C will comprise drilling methods and drill hole dimensions to include:

#### Offshore and Nearshore Program Areas

- Diamond drilling with Mud-Rotary (MR) pre-collars. Diamond drilling refers to the use of diamond drill bits. MR drilling techniques are typically used to drill into saturated rock. A pre-collar refers to a method of stabilising a drill hole, typically with the aid of PVC or steel casing.
- MR rotary cone drill bits will measure approximately 200-350 mm in diameter.
- Diamond drill bit sizes are expected to be PQ (85 mm diameter core, 122.6 mm diameter drill hole), HQ (63.5 mm diameter core, 96 mm diameter drill hole), NQ (47.6 mm diameter, 75.7 mm diameter drill hole) and BQ (36.4 mm diameter core, 60 mm diameter drill hole). Diamond drill bit size will be dependent on casing requirements and hole depth, with larger diameter bits used near the surface and smaller diameter bits used at depth.

#### Onshore and Nearshore Program Areas

- Diamond drilling with Reverse Circulation (RC) pre-collars. RC drilling techniques are typically used to drill into hard rock.
- RC drill bits will measure approximately 6 inches in diameter.
- Diamond drill bit sizes are expected to be PQ (85mm diameter core, 122.6mm diameter drill hole), HQ (63.5mm diameter core, 96mm diameter drill hole), NQ (47.6mm diameter, 75.7mm diameter drill hole) and BQ (36.4mm diameter core, 60mm diameter drill hole). Diamond drill bit size will be dependent on casing requirements and hole depth, with larger diameter bits used near the surface and smaller diameter bits used at depth.

The activities proposed within Table 1 relate only to the works proposed within the Application Area. Additional drill holes, access tracks and camps are proposed onshore beyond the western boundary of the Application Area. These activities are not dealt with within this consultation information pack as they do not form part of the activities for which authorisation has been sought. The Applicant has advised that any works undertaken outside the Application Area and within the KAC Determination Area will be carried out under a risk management approach, in consultation with KAC native title holders.

The scope and potential activities associated with Phases B and C will be highly dependent on the results of Phase A. As such, it is not possible for the Applicant to provide a comprehensive and detailed overview of all activities that may be associated with the later stages. Nevertheless, the Applicant acknowledges that any authorisation granted by the Premier is likely to only authorise those activities that are outlined in this consultation information package. For this reason, the Applicant has provided the below summary of the activities likely associated with Phases B and C.

The Applicant has also advised that its existing Exploration Programs for Environment Protection and Rehabilitation (E-PEPRs) may be varied prior to the Applicant progressing from Phase A to Phases B and C. See below for further details on the E-PEPRs that relate to the Exploration Program.

### **Resource Definition (Phase B)**

In the event of a discovery of significant mineralisation, exploration activities may progress from Exploration Drilling (Phase A) to Resource Definition (Phase B). Resource Definition activities would seek to determine whether the discovered mineralisation is of adequate size and grade to justify expenditure on a scoping study. Exploration activities in Phase B will be of a similar nature to those described in Exploration Drilling (Phase A); however, the activities will be conducted in greater concentration in the area of the discovery, for example, close-spaced drilling of 25 and/or 50 metre spacing.

Creation of additional lake access points may be necessary if the resource is large and needs to be accessed from multiple points. Additional water wells may be required to supply water for the greater demand from drilling. Further, the camp would be increased in size to accommodate additional personnel.

In the event that a mineral resource is confirmed through the Resource Definition phase (Phase B), a pre-feasibility study may then be commenced. A pre-feasibility study involves preliminary technical and economic studies to assess the viability of the resource and does not generally require further ground disturbance activities beyond the exploration activities already described in this document. Ancillary Activities such as expert flora, fauna, hydrology, engineering and/or archaeology studies may form part of this Phase of activities.

### **Reserve Definition (Phase C)**

Exploration Drilling (Phase A) may, based on positive results from the Resource Definition (Phase B) and its associated scoping study, progress to Reserve Definition (Phase C).

Reserve Definition may include more closely-spaced drilling; drilling 'twinned' drill holes designed to test mineralisation by drilling two holes from the same location; the use of larger diameter drill cores to provide metallurgical samples for testing; and drilling to confirm the size and boundaries of the resource. Resource Definition would see a focus on geotechnical and engineering studies, which will be conducted on the drill core to evaluate potential mining methods and costs to extract the ore mineral given the geology of the deposit. A bankable feasibility study may commence and, based on the outcome of this study, a mining lease proposal may be submitted with the intention of mining the deposit. Further Ancillary Activities in the nature of additional technical studies may also be needed at this stage to support the feasibility study work. A bankable feasibility study, if conducted, will determine whether the resource may support an economically viable mine and whether funding can be sought.

Development of a mine is not covered by this application. Separate processes under the Mining Act, and a further section 23 authorisation under the Act, would be required before a mine could commence.

### **Staffing of the Exploration Program during Phases B and C**

During the more intense phases of Resource Definition and Reserve Drilling (Phases B and C), as many as 200 personnel and support crew could be involved in drilling operations, split across multiple shifts. However, it is envisaged that up to a maximum of 30 personnel will be accommodated on site at any given time. As personnel numbers increase with intensification of activities, the Applicant will assess the benefits of locating personnel long-term at a remote mining camp versus drive in-drive out arrangements for the majority of its personnel.



## EXPLORATION PROGRAM DETAILS

The Applicant advises that the Exploration Program will be undertaken in such a way as to limit the impact to the minimum required to complete drilling and reduce the amount of scouring and disturbance to the salt crust, as far as practicable.

Exploration activities will take place within three specific program zones within the Application Area:

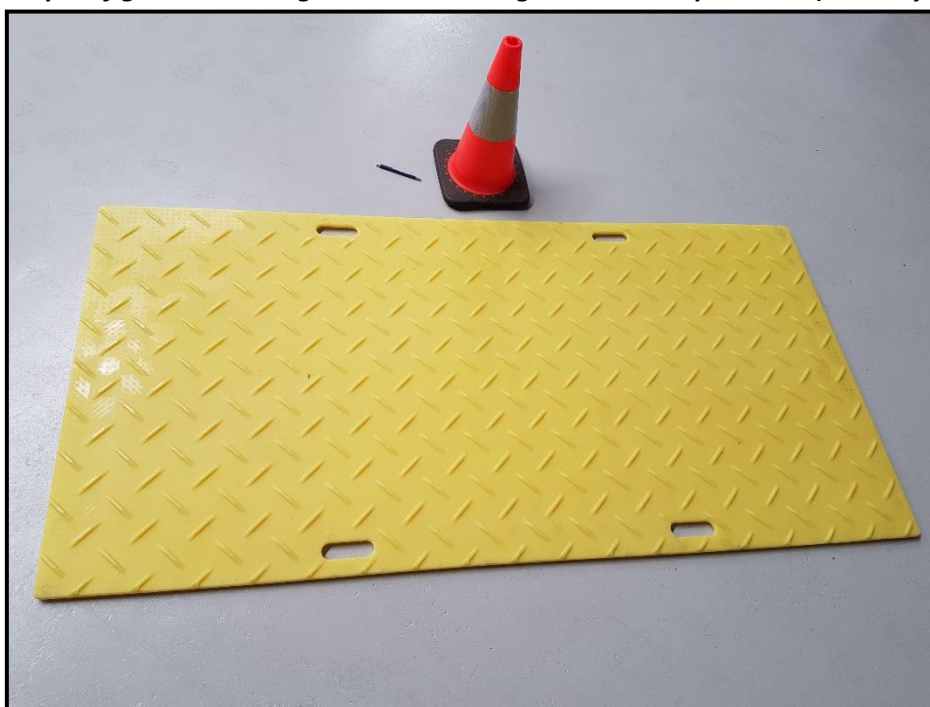
### Nearshore Program Area

The Nearshore Project Area refers to the area at, and adjacent to, the shoreline of Lake Torrens and is described as covering the area of the lakebed that extends from the shoreline for a distance of 500 metres towards the middle of the lake. The Nearshore Program Area is shaded in light green in Figure 3 and Attachment 2. This area is considered accessible by vehicles. Access will be facilitated through the construction of temporary lake access points with associated tracks. This will be achieved through the installation of ground-matting (Figure 2) and roadway padding to traverse the salt lake for drilling purposes.

The activities proposed for the nearshore zone are detailed below. The Nearshore Program is subject to the E-PEPR that was approved pursuant to section 70B of the Mining Act on 29 January 2020.

Given the significantly lower cost and risk factors associated with the Nearshore Program compared with the Offshore Program, the Applicant has advised that it is highly likely to pursue the Nearshore Program first and put the Offshore Program on hold pending outcomes of the Nearshore Program.

**Figure 2 – Example of ground matting to be used during nearshore exploration (courtesy of Applicant)**



### Offshore Program Area

The Offshore Program Area pertains to exploration activities proposed for all areas of the Lake Torrens lakebed that are more than 500 metres from the Lake Torrens shoreline, including Murdie Island and any other smaller islands within the lake. This area is considered to be inaccessible by vehicles.

Therefore, exploration activities carried out in the Offshore Program Area will be supported by the use of helicopters for the delivery of equipment and personnel. The Offshore Program Area is largely that area shaded yellow in Figure 3 and Attachment 2.

The Offshore Program Area is also subject to the E-PEPR that was approved pursuant to section 70B of the Mining Act on 29 January 2020.

The Offshore Program Area also incorporates Murdie Island and any other smaller islands within Lake Torrens, not including Andamooka Island. This is because any islands within the lake that cannot be accessed by vehicle must be accessed by helicopter and so cannot be drilled using a conventional exploration drilling rig.

The Offshore Program Area is shaded in yellow in Figure 3 and Attachment 2.

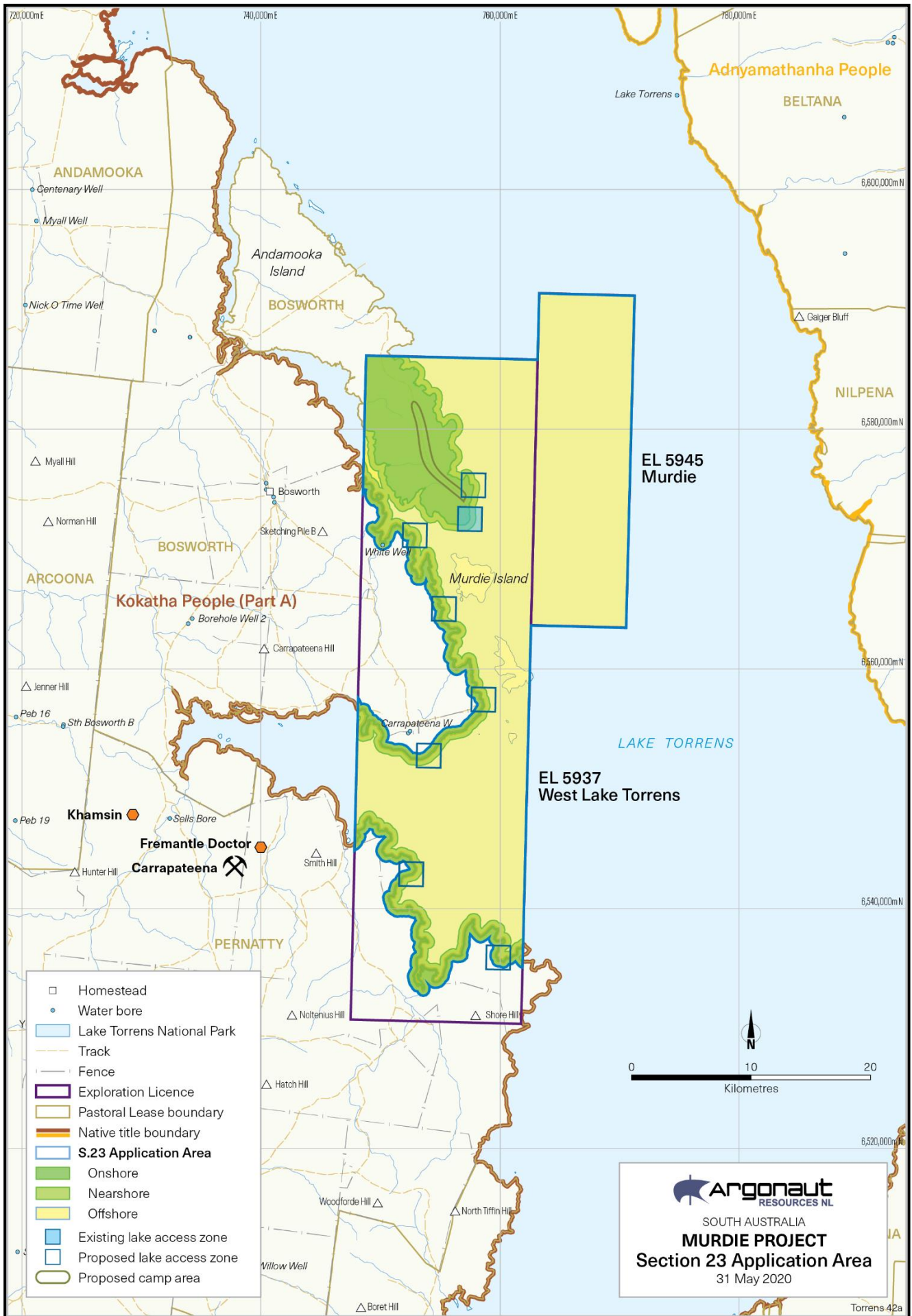
#### Onshore Program Area

Within the Application Area, the Onshore Program Area extends from the lake's shoreline for a distance of 500 metres inland. Authorisation over this area is sought by the Applicant because it overlaps the recorded Lake Torrens Aboriginal site. The Onshore Program Area also includes a southern portion of Andamooka Island that can be accessed by the Trimmer Inlet Causeway. Existing station tracks run to the southern tip of Andamooka Island. The Onshore Program Area is shaded in dark green in Figure 3 and Attachment 2.

The activities proposed for the Onshore Program Area are detailed below. The Onshore Program is also subject to a draft E-PEPR that has been submitted to the Department for Energy and Minerals (DEM) for approval. Approval for this document is pending, as of 15 June 2020. The E-PEPR for Onshore activities extends to the remainder of EL 5937 outside the Application Area. However, the works proposed outside the Application Area are not considered by this consultation information pack.

The Applicant has advised that the Exploration Program will not involve any access to Crombie Ridge, a culturally sensitive area located on Andamooka Island. The Applicant has undertaken to use reasonable measures to prevent access to Crombie Ridge by its staff and contractors.

Figure 3 – Map depicting the Application Area along with the Onshore, Nearshore and Offshore Program Areas (courtesy of Applicant)



## PROPOSED ACTIVITIES

The Exploration Program within the Application Area will involve a range of ground-disturbing works carried out on the western side of the Lake Torrens Aboriginal site, including the 500-metre wide stretch of land from the lake's shoreline inland; the southern portion of Andamooka Island and the surface of the lake, within EL 5937 and EL 5945. The activities described below relate primarily to Exploration Drilling (Phase A), but would also likely be undertaken as part of Resource Definition (Phase B) and Reserve Definition (Phase C).

The activities proposed by the Applicant can be separated into three categories:

- a) pre-exploration activity (gravity in-fill surveys)
- b) exploration activities (deep diamond drilling)
- c) associated infrastructure activities (i.e. upgrading tracks, creation of new tracks, water boring and the creation of new lake access points).

Each of the key activities associated with the Exploration Program are described below. Where necessary, the activities have been separated into Offshore, Nearshore and Onshore sub-headings where the activities proposed differ between these zones.

### **Pre-Exploration Activity - Gravity in-fill surveys**

#### *Offshore, Nearshore and Onshore Program Areas*

The Applicant has advised that on-ground geophysical gravity in-fill surveys (gravity surveys) will be undertaken prior to drilling of selected targets to better understand potential mineralisation within the Application Area. Gravity in-fill surveys will be used to define areas of known and untested gravity anomalism, which have been identified through airborne gravity data collection. The Applicant advises in respect of the gravity surveys that:

- it will comprise 100 metre spaced stations and 100 metre spaced lines, for a total of up to 10,000 station readings across the Application Area
- equipment will be carried out using low ground pressure, lightweight, all-terrain 4WD vehicles (see Figure 4) to transport the operator(s) and equipment between the observation sites
- a helicopter may be substituted for the vehicle where necessary
- at the observation sites, the gravity meter will be placed on a baseplate on the ground. The meter will then be levelled and read
- it will involve approximately 1-2 operators traversing different sections of the Application Area, as required.

The Applicant advises that the impact of the gravity survey equipment to the lakebed will be minimal, and less invasive than a pedestrian footprint.

**Figure 4 – Low ground-pressure quad bike (courtesy of Applicant)**



**Exploration Deep Drilling (RC/MR pre-collar with diamond tail)**

The Applicant advises that its Exploration Program will be undertaken progressively, referred to as ‘campaign style’, over period of years (possibly three or more, depending on the success of each phase). The following describes the proposed exploration drilling techniques that will be utilised within the Onshore, Nearshore and Offshore Program Areas:

- drilling activities will target copper-gold mineralisation at depths of greater than 500 metres. It is anticipated that drill holes will each be a minimum of 700 metres and a maximum of 1,500 metres in depth
- drill holes will have a steel or PVC outer collar-casing to prevent collar collapse. The total length of the collar-casing will depend on near-surface conditions. Where necessary, collar-casings will be sealed (on the outside) below ground surface using cement or an expanding foam sealer, to prevent any drilling fluids reaching the lake surface
- for the first approximately 200 metres of each hole, drilling will be undertaken using either RC or MR drilling techniques
- beyond the pre-collar (which typically extends no deeper than around 200 metres), diamond drilling will be used to diamond tail, ‘core’ (i.e. drill in a manner that returns solid sticks of rock known as drill core) to a depth of around 1,500 metres
- no vegetation clearing, excavation or digging activities are proposed within the Offshore and Nearshore Program Areas except for shallow excavation directly around the drill collar
- minimal vegetation clearing will be necessary within the Onshore Program Areas, as there is limited, if any vegetation, at the proposed campsite, along new access tracks or proposed drill locations.



### Exploration Drilling - Onshore Program Area

The Applicant has provided the following information regarding exploration drilling within the Onshore Program Area:

- access to drill locations will be via a network of existing station tracks
- each drill location will measure approximately 30 by 30 metres
- drill locations will be prepared using a grader or loader to remove gibber rocks and ensure a flat surface suitable for the drilling rig, support vehicles and personnel movement
- sumps will be required at each drill location, dug approximately 3 by 2 metres to a depth of ~1.5 metres and will be backfilled on completion of drilling. In some instances, the drilling contractor may be able to supply above ground tanks to avoid the requirement of sumps
- drilling in the Onshore Program Area will involve the use of a conventional drilling rig
- drill teams will employ conventional RC and diamond exploration drilling methods
- RC drilling will drill to an approximate 200 metre pre-collar depth. The resulting rock chips (samples) will be bagged on-site and removed at completion of drilling
- diamond drilling will drill diamond tails (drill core) for the remainder of the drill hole
- drill core from the diamond drilling will be retrieved by wireline and collected in core trays
- core trays will be transported from the drill location via light vehicle to the camp core storage area for logging prior to offsite transportation.

### Exploration Drilling - Nearshore Program Area

The Applicant has provided the following information regarding exploration drilling within the Nearshore Program Area:

- for drilling in the Nearshore Program Area, temporary access tracks and temporary drill platforms will be constructed using ground matting and padding technology. This will allow for a multi-purpose drilling rig to access the drill pad without significant disturbance to the lake surface
- all padding and matting will be removed at the completion of drilling
- initially, drilling may comprise 1 to 10 drill holes into each target area and, based on results, a closer spaced drill pattern may be employed
- pre-collars will use either RC or MR exploration drilling methods, depending on ground conditions, to an approximate 200 metre pre-collar depth
- diamond drilling will drill diamond tails (core) for the remainder of the drill hole
- in some instances, diamond drilling may be employed from the surface.

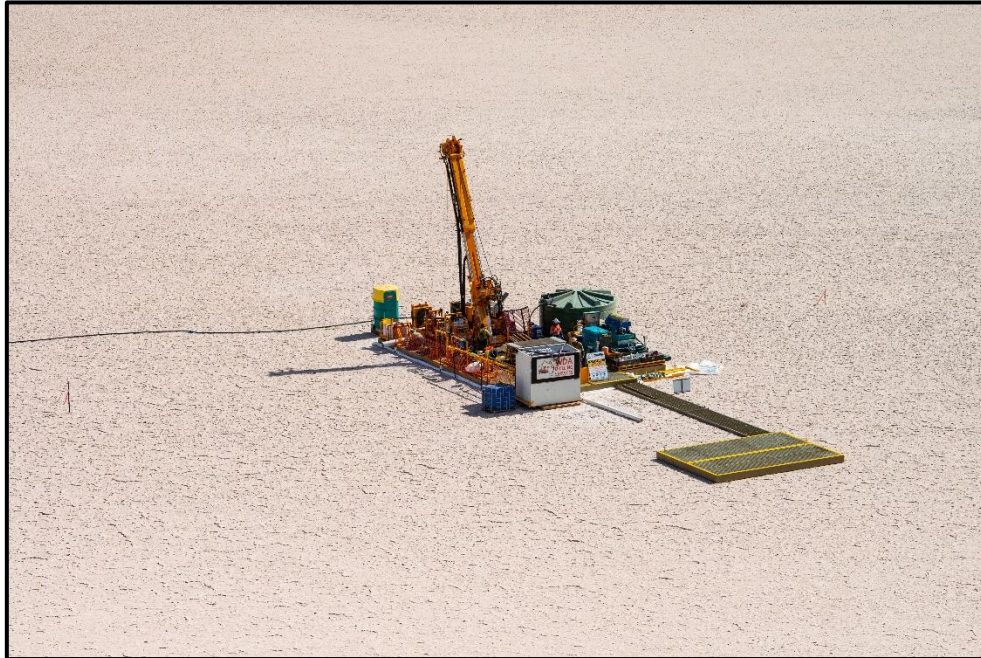
### Exploration Drilling - Offshore Program Area

The Applicant has provided the following information regarding exploration drilling within the Offshore Program Area:

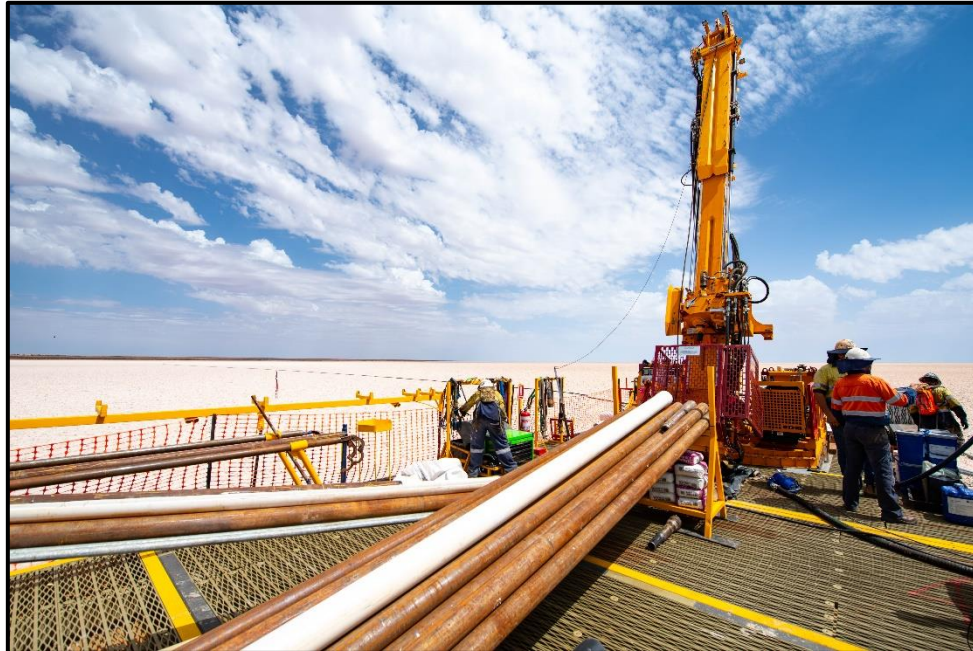
- for drilling in the Offshore Program Area, a fit-for-purpose, custom-built drill platform system will be used comprising pontoons that are self-contained and that support aluminum low ground-pressure platforms (Figure 5 and Figure 6)
- owing to the fragility of the Offshore Program Area, preparation of a drill location will involve transport of portable platforms and heavy equipment to site by helicopter (Figure 7)
- this infrastructure will include a removable helicopter pad and self-contained drill pads, which will be moved from site to site via helicopter to minimise disturbance to the surface of Lake Torrens
- initially, drilling may comprise 1 to 10 drill holes into each target area and, based on results, a closer spaced drill pattern may be employed

- pre-collars will use conventional MR methods, to an approximate 200 metre pre-collar depth
- diamond drilling will drill diamond tails (core) for the remainder of the drill hole
- in some instances, diamond drilling may be employed from the surface.

**Figure 5 – Aerial image of helicopter-assisted ‘offshore’ exploration drilling rig and helicopter landing pad on pontoons (courtesy of Applicant)**



**Figure 6 – Drill rig on protective pontoons with drilling rods at Lake Torrens (courtesy of Applicant)**



**Figure 7 - Helicopter transporting heavy equipment from a laydown area on Andamooka Island to an 'offshore' drilling rig (courtesy of Applicant)**



## **Water access options**

### **Water access options – All Program Areas**

The Applicant advises that its proposed exploration activities will require the use of groundwater and/or other water sources. The Applicant has advised that there are three potential sources of water that may be relied upon for exploration drilling within the Application Area. Details of each water source is provided below:

- A. **Water Source Option A** – a temporary hole may be drilled to a depth of approximately 30 to 50 metres at select drill locations to provide a local water source within the drill site footprint. Drilling wells to access groundwater requires a well permit and work must be done by a licenced driller. A well construction permit will be obtained from DEW in the event that wells are drilled for the extraction of groundwater.
- B. **Water Source Option B** – there is an existing water bore on the Southern Tip of Andamooka Island that was first drilled by Western Mining Company (WMC), the former rights holder to EL 5937. If the Applicant deems it necessary to use this bore, a header tank will be positioned

adjacent to the existing bore and water will be pumped from the water bore to the relevant drill locations via a water pipeline.

- C. **Water Source Option C** – potable water will be purchased from Arcoona Station as arranged with the landowner and trucked to a header tank located onshore. Water will be pumped from the header tank to the relevant drill locations via above-ground water pipelines.

It is envisaged that all three options will be required to provide water supply to all of the drill locations across the Application Area. Above-ground temporary water pipelines will be laid as necessary between header tanks and drill sites.

The Applicant advises that any water bores drilled within the Application Area will be included within the total number of drill holes (1,230) detailed in Table 1 above.

### **Access to drill locations**

The Applicant has advised that, where possible, existing access tracks will be utilised for the Exploration Program. Where new access tracks are required, these will be kept to a minimum.

Access to the Application Area will be via existing station tracks on Bosworth Station and Pernatty Station. For access to Andamooka Island, an existing station track that crosses the existing Trimmer Inlet Causeway, will be utilised.

### **Access to drill locations - Onshore Program Area**

The Applicant has advised that existing tracks within the Onshore Program Area will be upgraded where necessary. In general terms, track upgrading will be undertaken using the following methods:

- rolling using a roller machine and watering using a water truck
- it is not envisaged that grading will be required, as this may encourage erosion
- mitre drains will be installed for the purposes of surface water management
- track upgrading will be conducted in consultation with the relevant pastoralist.

In order to facilitate access onto Andamooka Island, the Applicant advises that the Trimmer Inlet Causeway will require stabilisation to allow the crossing of heavy vehicles. Where possible, the Applicant will limit vehicle movements on Andamooka Island to existing access tracks and within laydown, mobilisation and parking areas at the proposed camp site, the proposed location and configuration of which is shown at Figure 3 and Attachment 2. Where new access tracks are needed on Andamooka Island, these will be kept to a minimum and the location and construction of tracks will be in accordance with the Applicant's cultural heritage management plan, as described later in this document.

The Applicant advises that track upgrade works associated with the Exploration Program will be contracted to either KAC or the relevant landowner. Where new access tracks are required within the KAC Determination Area, these will be selected in consultation with KAC.

As the Nearshore Program Area can only be accessed through the Onshore Program Area, the following activities may be undertaken to facilitate this access:

- rolling existing station tracks and, where necessary, rolling new tracks to the lake's edge



- construction of lake access points will be kept to a minimum to allow access to as many drill holes from the one access point as possible
- temporary access across the lake to the drill locations will be constructed using matting and padding to stabilise and preserve the lake's surface
- vehicle movements on the lake surface will be governed by the Applicant's Ground Pressure Management Plan.

#### Access to drill locations - Nearshore Program Area (including the shoreline of Lake Torrens)

The Nearshore Program Area requires multiple lake access points for access onto the lake surface from the shoreline. The Applicant has identified seven separate lake access zones along the length of the Lake Torrens shoreline within the Application Area - see Figure 3 and Attachment 2. Where possible, new tracks and lake access points will be kept to within these seven zones. Ground disturbing works will be limited where possible to reduce the footprint of disturbance and to minimise rehabilitation requirements.

While the Applicant will endeavour to restrict lake access points to within these seven individual lake access zones, it is possible that additional lake access points may be required outside of the seven defined zones during Phases B and C of the Exploration Program.

A Ground Pressure Management Plan is in place to measure allowable bearing capacities to ensure loads applied to the lake surface do not produce shear stress on the surface within the Nearshore Program Area.

Salt crust disturbance will be minimised during the creation of lake access points, lake access tracks and drill pads by implementing the following ground surface protection strategies:

- 1) The lake shore and lake surface will be protected by using a base matting layer of geotextile fabric or equivalent material, which will act as a barrier between the ground surface and the overlying track, to protect the salt crust from indentation and potential contamination.
- 2) Padding will be installed above the ground matting for a maximum width of a single one-way road to allow crossing of heavy vehicle, nominally around 3 to 4 metres.
- 3) In the event that matting and padding is not sufficient in protection of the salt lake surface, an additional layer of 3 to 7 ply plywood sheeting would be installed between the base matting and top layer padding.

Access tracks to the lake shoreline and lake access points are currently in the conceptual design and will be positioned following on-ground inspections and, where appropriate, heritage clearance surveys with KAC.

#### Access to drill locations - Offshore Program Area

Accessing the Offshore Program Area will involve:

- the use of tracked light vehicles for personnel (if required) for in-fill gravity surveys, laying water pipelines and in emergencies
- a helicopter for the transport of personnel, heavy equipment, spoil, core, fuel and other equipment or goods to and from the drill locations as required.



## **Campsite, storage and equipment laydown areas**

### **Proposed campsite and laydown area on Andamooka Island:**

The Applicant advises that a temporary camp may be constructed on the southern portion of Andamooka Island. As per Figure 3, the campsite may be positioned anywhere within the depicted polygon area that measures approximately 9.2 km in length and 900 m in width. The Applicant advises that the proposed campsite zone is positioned along an existing access track. The proposed camp footprint itself, which will include a laydown area and a helipad, will cover approximately 100 x 100 metres.

Staff and contractors will be accommodated at a temporary camp facility suitable to accommodate approximately 27 personnel during the initial phase of the Exploration Program. The number of personnel accommodated in the camp may increase if exploration advances into subsequent Phases B or C. The Applicant advises that no camping will occur near the shoreline or on the salt crust of Lake Torrens.

Camp construction will not involve any excavation activities; however, the area may be rolled and loose rocks within the vicinity will be removed. Grading of the area is not preferred by the Applicant and will be limited where possible.

Two other campsites are proposed by the Applicant, but these proposed camp locations are outside the Application Area and lie within the KAC Determination Area. It is envisaged that only one camp will be in operation at any one time across the entire Exploration Program.

## **Management of Drill Spoil**

### **Onshore Program Area**

For the Onshore Program Area drilling activities require adequately sized in-ground sumps to capture mud and spoil. Sumps will be backfilled and the location rehabilitated to reflect pre-existing ground conditions.

### **Nearshore and Offshore Program Areas**

For the Nearshore and Offshore Program Area drilling activities, the Applicant advises that a solids recovery unit (SRU) will be utilised during the entire drilling process. The SRU represents an industry 'best-practice' approach, in that it captures all drill cuttings and fluids at the drillhole collar and recycles water for further use. Solids are captured in above-ground tanks, thereby avoiding the need for in-ground sumps. Spoils from the centrifuge will be collected in appropriate bags and transported off the lake for temporary storage at the laydown area.

Drill spoil will be disposed of offsite (that is, not within Lake Torrens or the Andamooka Island area) and stored temporarily within a laydown area adjacent to accommodation camps outside the Application Area. Drill spoil will then be transported from the laydown area to an approved waste disposal facility at either Roxby Downs or Port Augusta.

## **Progressive decommissioning, capping and site rehabilitation**

### **Onshore Program Area**

For exploration activities within the Onshore Program Area, the Applicant advises that rehabilitation measures will include the following progressive rehabilitation measures:

- a) at the completion of each drill hole, the drill hole and sumps will be decommissioned and capped in accordance with the DEM Earth Resources Information Sheet M21 (July 2012), *Mineral exploration drillholes – general specifications for construction and backfilling*
- b) decommissioning will usually occur prior to the commencement of any additional drill holes however, the timing for decommissioning of drill sites may be postponed if twinned holes or downhole surveying activities are required as would typically occur in Phases B and C.

### Nearshore and Offshore Program Areas

For exploration activities within the Nearshore and Offshore Program Areas, the Applicant advises that rehabilitation measures, including decommissioning and capping of drill holes will be as described under Onshore Program Areas immediately above, and may also include the following progressive rehabilitation measures:

- a) rehabilitation may involve the use of hypersaline water to respray the footprint area to facilitate crust redevelopment if required
- b) it is proposed that aerial drones will be used to monitor site rehabilitation over the life of the Exploration Program.

### Ancillary Activities

The Applicant advises that activities that may become necessary for the carrying out of the Exploration Program, and which might involve visits to the Application Area by third parties not associated with the Applicant, or the use of other equipment and materials within the area which may impact on land, include:

- inspection visits by DEM personnel under *Mines and Works Inspection Act 1920 (SA)* or by other regulatory authorities or government instrumentalities
- location of monitoring equipment or establishment of monitoring stations / wells and the like, as mandated by DEM, DEW, National Parks and Wildlife or adopted voluntarily as environmental risk mitigation measures by the Applicant
- visits by consultant experts to undertake flora, fauna, hydrology, engineering or archaeological studies as part of scoping / pre-feasibility studies
- trucking of sand / gravel for road construction / maintenance / repair and the use of heavy equipment for that purpose
- trucking and storage of potable water for campsites, provision of catering facilities, waste and sewerage management systems, power and telecommunications facilities and general maintenance activities at camp sites
- temporary fencing / bunding of areas for protection/ management of pastoral activities or for protection of sensitive environmental / heritage areas
- erection of signage, including to protect sensitive heritage areas, work health and safety signage or other measures needed to comply with Government regulation or the Applicant's site policies
- rehabilitation of tracks and campsite areas at the completion of exploration, in accordance with E-PEPR timelines, noting that the obligation to undertake these rehabilitation activities may extend over many months or even years after exploration activities have ceased.

### **EXPLORATION PROGRAMS FOR ENVIRONMENT PROTECTION AND REHABILITATION (E-PEPRS)**

In November 2019, the Applicant submitted an E-PEPR for its proposed Exploration Program as it relates to the Nearshore and Offshore Program Areas. On January 29 2020, the Applicant's E-PEPR was approved by DEM in accordance with the Mining Act.

The Applicant also submitted an E-PEPR for its proposed Onshore Program Area exploration activities within EL 5937. As of 15 June 2020, this E-PEPR is still pending approval from DEM.

Please note that while the information contained within this consultation information pack summarises the relevant elements of both E-PEPRs, it is not an exhaustive articulation of either document.

A copy of the Applicant's Nearshore and Offshore E-PEPR, as well as details regarding the Applicant's Onshore E-PEPR, may be obtained by contacting Kelaray on 08 8231 0381.

Please note that the Applicant's Nearshore/Offshore and the Onshore E-PEPRs do not currently include provisions for exploration activities associated with Phase B and C of the Exploration Program. The Applicant advises that, in the event of a mineral discovery, it will notify DEM and will seek to vary the relevant E-PEPR as required under the Mining Act.

Both the Nearshore/Offshore and the Onshore E-PEPRs currently contemplate the drilling of up to 200 drill holes each. Where progression to Phases B and C of the Exploration Program can be achieved within the scope of the existing PEPRs (that is, by keeping the number of drill holes to a maximum of 200), the Applicant has advised that amendment to the relevant E-PEPR may not be sought immediately.

The above information notwithstanding, the Applicant seeks authorisation under the Act in relation to the entire scope of its Exploration Program (Phases A through C), which involves the drilling of up to 1,230 holes within the Application Area.

## **PROPOSED MANAGEMENT OF ABORIGINAL HERITAGE DURING THE EXPLORATION PROGRAM**

In order to appropriately manage Aboriginal heritage during the Exploration Program, the Applicant has developed a Cultural Heritage Management Plan (CHMP) and a Chance Find Procedure.

Among other things, the CHMP deals with:

- the roles and responsibilities of relevant parties (including the Applicant and its contractors) with regard to Aboriginal heritage management
- a requirement for all ground-disturbing works to be issued with a Land Disturbance Permit (LDP) that is issued based on the results of environmental and heritage surveys undertaken over the land in question
- consulting with Traditional Owners to decide how to mitigate damage to Aboriginal heritage
- avoidance of Aboriginal heritage, or relocation and storage of heritage where avoidance is not possible
- for immovable heritage not previously recorded, Traditional Owners and heritage professionals will be engaged to record the heritage prior to seeking further authorisations under the Act if required, or proceeding with activities in the area
- cultural heritage inductions for all employees and contractors
- custodian-escorted cultural heritage inductions for certain project staff to learn more about the heritage landscape of the area, some of which include overnight visits to specific locations
- management and monitoring controls to manage risks and potential impacts to Aboriginal heritage
- the Lake Torrens Aboriginal site's protected status under the Act
- KAC's Determination Area.

The Applicant advises that the CHMP requires employees, contractors and visitors to adhere to its Chance Find Procedure and Stop Work Directions. These require works to cease in the event that suspected

Aboriginal heritage is encountered, and that the discovery be reported to a site supervisor. A no entry 'buffer zone' is then established around the discovery and details of the discovery are reported to the Chief Executive Officer (CEO) of Argonaut, the Applicant's parent company. A cultural heritage expert is then engaged to visit the location. At the same time, the relevant Aboriginal group representatives are informed and a site visit is arranged. If the discovery is determined not to be Aboriginal heritage, works proceed. If the discovery is Aboriginal heritage, a heritage expert is commissioned to prepare a report that includes recommendations for mitigation. This report is provided to the Argonaut CEO, AAR and relevant Aboriginal parties.

Following receipt of the expert report, the Argonaut CEO will oversee the implementation of any mitigation actions. Where the discovery is located beyond the Application Area, further authorisation under the Act to proceed with the works will be sought. In the event that possible skeletal remains are encountered, AAR's Aboriginal Heritage Discovery Procedures will be used to deal with any Aboriginal ancestral remains.

## **SECTION 13 CONSULTATION**

Prior to considering whether to grant the authorisation sought by the Applicant under the Act, section 13 requires the Premier to take all reasonable steps to consult with the Committee, Traditional Owners and any other Aboriginal parties that he considers may have an interest in the matter.

### **Invitation for Submissions from Interested Aboriginal Parties**

Verbal and written submissions are invited from all interested Aboriginal parties. Consultees can make a submission to AAR by phone, letter or email. Anyone in receipt of this consultation information package is encouraged to share it with other Aboriginal parties who may also have an interest. Electronic copies are available online at: [dpc.sa.gov.au/heritage-applications](http://dpc.sa.gov.au/heritage-applications).

### **The consultation period closes at 5:00 pm on Thursday 23 July 2020.**

In line with social distancing requirements, no public meeting is scheduled as part of this consultation process. However, AAR will endeavour to contact key Traditional Owners as well as Aboriginal people and organisations with a known interest in the application area prior to the closure of the consultation period.

If you do not receive a telephone call, but wish to learn more about the Exploration Program and/or lodge a submission, please call AAR on (08) 8226 8900, or write to:

Mr Alex van Wessem  
Principal Project Officer (Heritage)  
Aboriginal Affairs and Reconciliation  
Department of the Premier and Cabinet  
GPO Box 2343  
ADELAIDE SA 5001  
Email: [DPC-AAR.CIR@sa.gov.au](mailto:DPC-AAR.CIR@sa.gov.au)

When making a submission, consultees should consider, and provide feedback on, the following key questions:

1. **Should the authorisation sought be granted to the Applicant? Why or why not?**
2. **If the authorisation is granted, what conditions, if any, should be imposed on it?**
3. **Are there any other matters that the Premier should be aware of when considering the application?**

Unless otherwise requested, consultee submissions will be forwarded to the Applicant for comment. Any such comments will also be provided to the Committee and the Premier along with all consultee submissions.

Once the public consultation period has closed, all feedback will be forwarded to the Committee for its review. In light of that information, the Committee's own views about the Project will be sought. AAR will collate consultee and Committee feedback with its own recommendations, and provide these to the Premier within a single brief to assist him to make his final decision about the application.

AAR is happy to answer questions or provide further information about the Exploration Program at any time before the consultation period closes.

**ALL SUBMISSIONS MUST BE PROVIDED BY 5:00 PM ON THURSDAY 23 July 2020.**

Thank you for taking the time to consider this consultation information pack. If you are an interested Aboriginal party, AAR strongly encourages you to make a submission before the closing date.

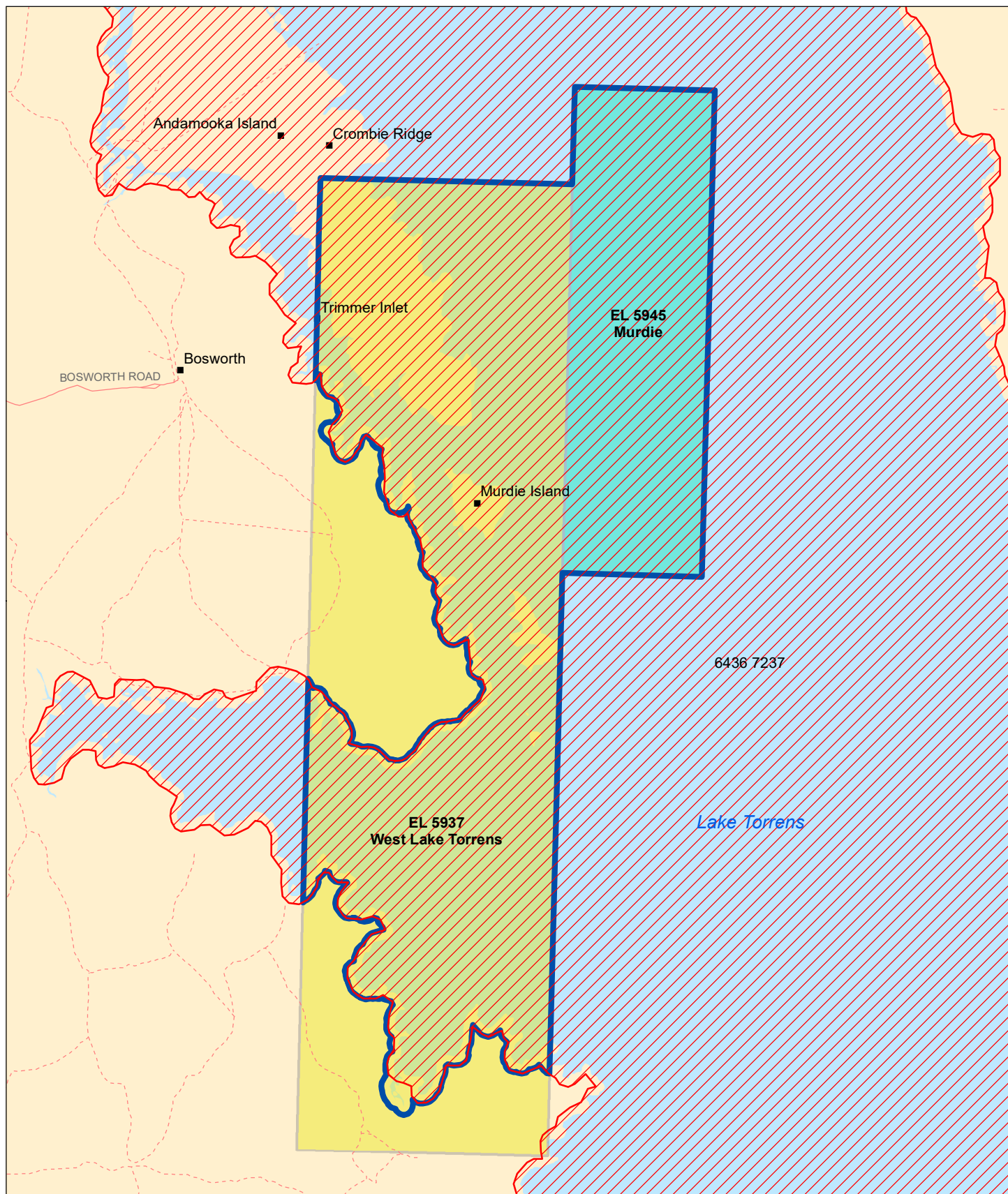
**Attachments:**

Attachment 1: Application Area shown against Central Archive Site 6436-7237.

Attachment 2: Exploration Program map as it relates to the Application Area (provided by Applicant)



Section 23 Application Area - Lake Torrens Murdie Exploration Program



**Legend**

**AAR Heritage Sites**

Reported

**Application Area**

S.23 Application Area

**Mineral Exploration Licences**

EL 5937 West Lake Torrens

EL 5945 Murdie

**Localities**

Localities

**Roads**

Highway

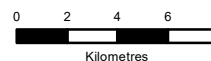
Principal Road

Secondary Road

Minor Road



1:300,000



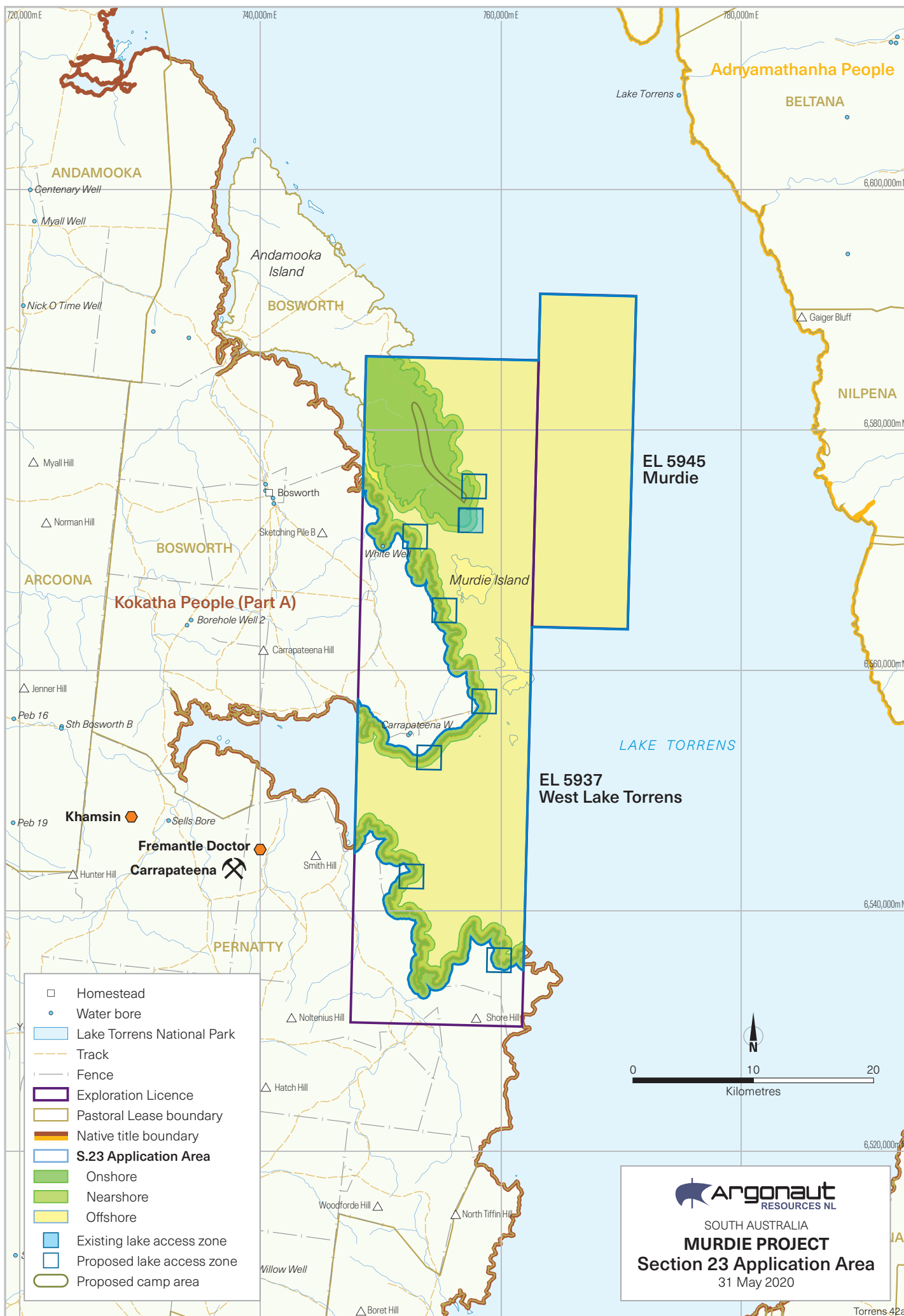
**Lake Torrens**

Produced by: Heritage Information Team  
 Aboriginal Affairs and Reconciliation (AAR)

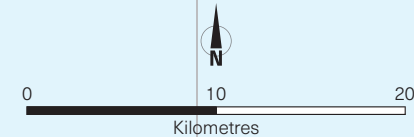
Data Source: Roads / Topographic / Parcel ID - LocSA  
 Heritage Sites - AAR

Projection: Lambert Conformal Conic  
 Datum: Geocentric Datum of Australia 1994  
 Job No: 2020052  
 Compiled: 1/10/2020

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- Homestead
- Water bore
- ▭ Lake Torrens National Park
- - - Track
- - - Fence
- ▭ Exploration Licence
- ▭ Pastoral Lease boundary
- ▭ Native title boundary
- ▭ S.23 Application Area
- ▭ Onshore
- ▭ Nearshore
- ▭ Offshore
- ▭ Existing lake access zone
- ▭ Proposed lake access zone
- ▭ Proposed camp area



  
 SOUTH AUSTRALIA  
**MURDIE PROJECT**  
**Section 23 Application Area**  
 31 May 2020