Government of South Australia
Department for Energy and Mining

19 February 2025

Mr. Mr Greg Hall
Chief Executive Officer & Executive Director
Big Lake Uranium Pty Ltd
Level 1, 103 King William Street
KENT TOWN, SA
5067

gh@alligatorenergy.com.au

Dear Mr. Hall

Approval Notification - Exploration Program for Environment Protection and Rehabilitation (EPEPR2024-046) EL 6367

The program for EL 6367, final version submitted on 21 January 2025 to conduct 40 Rotary mud and 80 AC drill holes to a maximum depth of 350 and 200 m respectively at the Big Lake Uranium Project situated within a 100 km radius of Innamincka, has been approved in accordance with Section 70B(5) of the *Mining Act, 1971 (the Act)*.

You are reminded that:

1. You must at all times implement and comply with the approved EPEPR.
2. The approved EPEPR will be made publicly available on the Mining Register.
3. Exploration operations on “native title land” (as defined in the *Native Title (South Australia) Act, 1994)* must be conducted in accordance with Part 9B of the Act.
4. In accordance with Section 70C of the Act, the licensee must review the EPEPR on request of the Minister’s Delegate within a time specified in the request and submit the revised EPEPR for approval.
5. As the operator for the approved EPEPR you must take all reasonable and practical measures to avoid undue damage to the environment and meet all the approved outcomes (when measured against the approved criteria) listed within the EPEPR.
6. In accordance with regulation 78 of the *Mining Regulations 2020* and Terms of Reference 012 (TOR 012), the licensee must submit an Exploration Compliance Report to the Mineral Exploration Branch each year, within 60 days after the anniversary of the date the licence was granted, and 60 days after the expiry or surrender of the EL, or in accordance with joint reporting requirements agreed to with the Minister.
7. In accordance with regulation 16(4) of the Mining Regulations 2020, drillhole and geological samples must be kept in accordance with guidelines issued by the Department for the term of the relevant tenement and for 7 years after the expiry, surrender, cancellation or forfeiture of the tenement to which the sample relates. Furthermore, samples must be retained by the tenement holder, or provided to the Director, in accordance with those guidelines (unless the Minister has authorised, on application by the tenement holder in a manner and form set out in the guidelines, the destruction or disposal of the samples).
8. The EPEPR is approved for a period of twelve months from the date of this letter.

This approval does not constitute endorsement of the systems that you have in place to manage your exploration operations in compliance with the Act and licence conditions. In granting the approval, the EPEPR and your capacity to undertake the proposed activities have been considered. However, responsibility for compliance with the Act and the licence conditions, remains at all times with the licensee.

This approval relates only to the requirements of the Act. Other legislation relevant to this application includes the *South Australian Work Health and Safety Act, 2012* and Regulations. For example, Chapter 10 of the *Work Health and Safety Regulations, 2012 (SA)* introduced new requirements for mine operators in South Australia. The new requirements include a notification for mining operations and the establishment of a Safety Management System. For further information on your responsibilities, including a guide to Chapter 10 and the Mine Operator Notification Form, contact SafeWork SA on 08 8303 0255 or via its website at www.safework.sa.gov.au.

The proposed program may be subject to the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Mineral exploration industry-specific information is contained in an appendix in the EPBC Matters of National Environmental Significance – Significant impact guidelines 1.1. This document is available on the Australian Government's Department for Agriculture, Water and the Environment website at http://www.environment.gov.au/resource/significant-impact-guidelines-11-matters-national-environmental-significance. For further information, contact the Department for Agriculture, Water and the Environment, or visit its website at www.environment.gov.au/.

Proposed changes to exploration operations stated in the approved EPEPR may require a EPEPR review to be submitted for assessment. Where a EPEPR review is required, implementation of the operational changes can only occur after the revised EPEPR is approved. Further information on when an EPEPR review is required can be found in Departmental guideline *MG22 Conducting mineral exploration.*

If you require any further information, please contact Cobus Martins on 0437252134 or Shelley Rasmussen 0409 797 670 or email DEM.exploration@sa.gov.au.

Yours sincerely

Simon Constable
GENERAL MANAGER MINERAL EXPLORATION
REGULATION & COMPLIANCE
In accordance with delegated
Ministerial powers and functions

CC: DEW Drilling Inspector miningwatersciencereferrals@sa.gov.au
CC: DEW Hydrogeologist miningwatersciencereferrals@sa.gov.au

The Department's Regulatory Guidelines, Ministerial Determinations and Information Sheets are available at: http://energymining.sa.gov.au/minerals/knowledge_centre

APPLICATION Mining Act 1971 and Mining Regulations 2020

EXPLORATION PROGRAM FOR ENVIRONMENT PROTECTION AND REHABILITATION (PEPR)

Government of South Australia
Department for Energy and Mining

USE THIS TEMPLATE TO: Apply to conduct mineral exploration operations not covered by the Generic PEPR (Adopted Program) for a 12 month period of time on one or more exploration licences (ELs), retention leases (RLs) or mineral claims (MCs) in South Australia.

Refer to the Exploration PEPR Terms of Reference and Minerals Regulatory Guidelines MG22 when completing this application. Further information on exploration requirements in South Australia is available on the Department for Energy and Mining (DEM) Minerals website www.energymining.sa.gov.au .

SECTION A – GENERAL DETAILS

Operational approval period	**12-month approval period, with an additional 3 months to complete all rehabilitation**			
Tenement details	EL6367			
Tenement holder(s) (for each tenement)	Big Lake Uranium Pty Ltd.			
Operating company	Alligator Energy Ltd.			
Agency agreement (if applicable)	An agreement between Alligator Energy Ltd to act as agent and manager for Big Lake Uranium Pty Ltd in all matters related to exploration was endorsed by the Mining Registrar on 3rd April 2020.			
PEPR prepared by	Ben Williams, Mandy Slattery, Matt Daniel and Adam Huddleston			
Project supervisor/contact person(s)	Ben Williams – Senior Exploration Geologist bw@alligatorenergy.com.au 0438 760 106 Mandy Slattery – Exploration & Development Compliance Support Officer ms@alligatorenergy.com.au 0413 857 994			
Project/prospect name	Big Lake Uranium Project			
Location details	Cooper Basin, within a 100 km radius of Innamincka			
Project description, commodity type and mineralisation model	The Big Lake project is targeting sedimentary hosted uranium mineralisation. The program is designed to verify and then identify the origin of natural gamma anomalies previously identified in historic oil and gas exploration and production wells. The results of previous drilling have identified several intersections of anomalous uranium occurring in a geological setting that may be a vector for roll-front style sedimentary uranium mineralisation.			
Proposed project schedule	Start date	15/02/2025	End date	15/02/2026

DECLARATION

I, the tenement holder, declare under regulation 84 of the Mining Regulations 2020, that I have taken reasonable steps to review the information in this PEPR/revised PEPR to ensure its accuracy.

Name	Mr Greg Hall	Signature (digital allowed)	
Position	Chief Executive Officer	Date	16/12/2024

Copy and paste the above table if there is more than 1 tenement holder.

Note: An authorised representative from each tenement holder must sign the declaration (eg in accordance with the Corporations Act 2001).

SECTION B – PROGRAM PREPARATION AND ACCESS TO LAND

Work undertaken in preparing the proposal

Summarise the research and fieldwork undertaken in preparing the proposal including:

- desktop reviews of existing information
- field visits for reconnaissance
- contractor consultation (i.e. equipment scale, type)
- other information used when planning the proposed program.

New drill targets are being selected and prioritised based upon detailed analysis of past exploration activities in the area, available geological/geophysical datasets and Alligator Energy's (AGE) most recent drilling program (2024). This includes:

- 2024 drilling program results and their integration into the AGE mineralisation model, including geochemical, lithological, and redox analyses of downhole data.
- Desktop review of historic petroleum wells, mineral drillholes, gamma logs and seismic data.
- Geological interpretation of geophysics (magnetics and EM data) including isochron modelling and iso-proportional/time slicing of seismic data for formation thickness interpretation.
- Ongoing data modelling and generation of 3D geological surfaces from well-picks.
- Environmental desktop review using Naturemaps (SA), the EPBC act protected matters report search tool listed on Flora and Fauna, National Groundwater Dependent Ecosystem Atlas, WaterConnect (SA), PlanSA and internet literature searches.
- Consultation with environmental specialist with experience in natural resource management works within the Cooper Basin.
- Engagement on Native Title and access agreements with the Yandruwandha/Yawarrawarrka Traditional Land Owners Aboriginal Corporation.
- Engagement with SANTOS, Beach Energy, Gidgealpa Station and Merty-Merty Station concerning the timing and type of on-ground works.

Consultation (r. 64)

Using the table below, provide a summary of the individual or group of similarly affected persons and summarise the results of consultation that has been undertaken on the proposed operation. Types of interested or affected parties include residents, council, government agencies etc (exclude native title groups and defence owned or controlled lands – refer to relevant sections below).

Tenement	Stakeholder	Land tenure	Land use	Date and type of NOE served	Type of exempt land	Date waiver obtained	Date consultation/access agreement and/or permits signed/authorised	Stakeholder concerns raised and how addressed
EL 6367	***Santos***	***Impacted licences:*** *PPL 9, 11, 16 and 190 (see Map 11). PRL 193 (see Map 12).* ***Impacted licences due to field camp:*** *PRL 113.* **Subsidiary companies include:** • *Vamgas Pty Ltd* • *Alliance Petroleum Australia Pty Ltd* • *Reef Oil Pty Ltd* • *Santos Petroleum Pty Ltd* • *Bridge Oil Developments Pty Ltd* • *Santos (BOL) Pty Ltd* • *Basin Oil Pty Ltd* • *Santos (NARNL Cooper) Pty Ltd* *Santos QNT Pty Ltd*	*Petroleum exploration, extraction and production.*	***Notice of Entry*** *15/8/23 – 21A notice regarding November 2023 cultural heritage survey.* *27/3/24 – 21B intention to establish of a temporary camp and lay down area.* *27/3/24 – 21B notice regarding 2024 drill program,* *12/9/24 – 21A notice regarding October 2024 cultural heritage survey.*	*N/A.*	*N/A.*	*Consultation with Environment, Sustainability & Governance officer and Tenures Adviser ongoing.* *16/2/24 – Santos contacted regarding Gidgealpa NOE and required changes to communication chain.* *25/3/24 – New NOE for areas north of Merty-Merty Station required due to changed location of field camp.* *1/5/24 – SANTOS inductions completed.* *16/10/24 – Proposed clearance areas sent to Tenures Advisor.* *18/10/24 – Update on exploration program.* *28/10/24 – Verification on conclusion of on-ground works.*	***Awareness regarding Santos infrastructure and operations raised:*** – *Engagement ongoing. Continued contact via phone and email to keep SANTOS advised on project progress, timing and changes.* – *23/10/24 – Meeting to discuss clearance locations and timing.* – *7/8/24 – Infrastructure GIS data package updated.* – *Santos notified before heritage survey undertaken.* – *Detailed fieldwork plans for exploration activities provided to SANTOS the week prior to any on ground activities.* *Discussions ongoing concerning active gas field operations and infrastructure.*

Exploration PEPR application – 12-month period

Tenement	Stakeholder	Land tenure	Land use	Date and type of NOE served	Type of exempt land	Date waiver obtained	Date consultation/access agreement and/or permits signed/authorised	Stakeholder concerns raised and how addressed
EL 6367	***Beach Energy Ltd***	***Impacted licences:*** *PPL 9, 11, 16 and 190 (see Map 11). PRL 193 (see Map 12).* ***Impacted licences due to field camp:*** *PRL 113.* **Subsidiary companies include:** • *Delhi Petroleum Pty Ltd* • *Impress (Cooper Basin) Pty Ltd* • *Drill search (513) Pty Ltd*	*Petroleum exploration, extraction and production.*	***Notice of Entry*** *15/8/23 – 21A notice regarding November 2023 cultural heritage survey.* *27/3/24 – 21B intention to establish of a temporary camp and lay down area.* *27/3/24 – 21B notice regarding 2024 drill program,* *12/9/24 – 21A notice regarding October 2024 cultural heritage survey.*	*N/A.*	*N/A.*	*Ongoing consultation C/O Paul Belfrage, Senior Tenures Advisor.* *15/8/23 – Form 21A & 21B served to Beach Energy.* *25/3/24 – New NOE for areas north of Merty-Merty Station required due to changed location of field camp.* *18/10/24 – Update on exploration program.*	– *No concerns raised on previous NOE's.* – *Primary contact confirmed 31/5/23.* *Engagement ongoing. Continued contact via email to keep Beach advised on project progress, timing and changes.*
	Shelley Rasmussen & Jack White	*SA Government - Department for Energy and Mining*	*N/A.*	*N/A.*	*N/A.*	*N/A.*	*Ongoing consultation regarding PEPR and exploration licence requirements.*	– *Multiple, concerns addressed as raised. Last contact 8/10/24.*
	Tim Wilson	*SA Government - Conservation and Mining.*	*N/A.*	*N/A.*	*N/A.*	*N/A.*	*Ongoing consultation regarding stakeholder contacts and regulatory requirements.*	– *No concerns raised.*
EL 6367	***Steve Bodey***	*State Drilling Inspector – Department for Environment and Water*	*N/A.*	*N/A.*	*N/A.*	*N/A.*	*8/2/24 – 13/2/24. Ongoing consultation regarding drilling into possible confined aquifers.* *26/4/24 – Intent to commence drilling sent to drilling inspector.* *22/5/24 – Phone call regarding grouting procedure.*	- *Concerns raised regarding drilling into possible confined aquifers.* – *A licenced class 2 driller with appropriate experience and equipment imbedded with the AGE team for all drill programs.*

Exploration PEPR application – 12-month period

Tenement	Stakeholder	Land tenure	Land use	Date and type of NOE served	Type of exempt land	Date waiver obtained	Date consultation/access agreement and/or permits signed/authorised	Stakeholder concerns raised and how addressed
	Mining Registrar	*SA Government - Department for Energy and Mining.*	*N/A.*	***Notice of Entry*** *15/8/23 – 21A notice regarding November 2023 cultural heritage survey.* *27/3/24 – 21B intention to establish of a temporary camp and lay down area.* *27/3/24 – 21B notice regarding 2024 drill program,* *12/4/24 – 21A Notice regarding heritage clearance for a temporary camp and lay down area.* *12/9/24 – 21A notice regarding October 2024 cultural heritage survey.*	*N/A.*	*N/A.*	*Copies of all NOE's sent to the Mining Registrar as proof of service.*	– *No concerns raised.*
EL6367	***Andrew Beckworth, Sheridan Dawson and Greg Bell***	*SANTS. Legal advisers for Yandruwandha Yawarrawarrka Traditional Land Owners Aboriginal Corporation.*	*N/A.*	***Notice of Entry*** *15/8/23 – 21A notice regarding November 2023 cultural heritage survey.* *27/3/24 – 21B intention to establish of a temporary camp and lay down area.* *27/3/24 – 21B notice regarding 2024 drill program,* *12/4/24 – 21A Notice regarding heritage clearance for a temporary camp and lay down area.* *12/9/24 – 21A notice regarding October 2024 cultural heritage survey.*	*N/A.*	*N/A.*	*15/8/23 – Form 21A & 21B served to SANTS.* *Ongoing consultation. Last meeting 18/10/24.*	– *No concerns raised on previous NOE's or work programs.*

Exploration PEPR application – 12-month period

Tenement	Stakeholder	Land tenure	Land use	Date and type of NOE served	Type of exempt land	Date waiver obtained	Date consultation/access agreement and/or permits signed/authorised	Stakeholder concerns raised and how addressed
EL6367	***Jason & Jayne-Marie Barns***	*Gidgealpa Station.*	*Pastoral station.*	***Notice of Entry*** *15/8/23 – 21A notice regarding November 2023 cultural heritage survey.* *27/3/24 – 21B intention to establish of a temporary camp and lay down area.* *27/3/24 – 21B notice regarding 2024 drill program,* *12/4/24 – 21A Notice regarding heritage clearance for a temporary camp and lay down area.* 12/9/24 – *21A notice regarding October 2024 cultural heritage survey.*	*N/A.*	*N/A.*	*Ongoing consultation. Last contact regarding NOE and project progress 23/10/24.*	- *No concerns raised on previous NOE's or work programs.*
EL6367	***Sharon & Graham Betts; Glen and Christine Armstrong***	*Merty-Merty Station.*	*Pastoral station*	***Notice of Entry*** *15/8/23 – 21A notice regarding November 2023 cultural heritage survey.* *27/3/24 – 21B intention to establish of a temporary camp and lay down area.* *27/3/24 – 21B notice regarding 2024 drill program,* *12/4/24 – 21A Notice regarding heritage clearance for a temporary camp and lay down area.* 12/9/24 – *21A notice regarding October 2024 cultural heritage survey.*	*N/A.*	*N/A.*	*Ongoing consultation. Last contact regarding NOE and project progress 14/11/24.*	– *No concerns raised on previous NOE's or work programs.* - *AGE worked closely with station during 2024 drilling program for camp and catering activities. This is expected to repeat for subsequent programs.*

Exploration PEPR application – 12-month period

Tenement	Stakeholder	Land tenure	Land use	Date and type of NOE served	Type of exempt land	Date waiver obtained	Date consultation/access agreement and/or permits signed/authorised	Stakeholder concerns raised and how addressed
EL6367	***Eva Freeman Australian Heritage Services (AHS)***	*Cultural heritage consultancy for Yandruwandha Yawarrawarrka Traditional Land Owners Aboriginal Corporation.*	*N/A.*	*– Early Exploration request sent 6/6/23.* *– Aboriginal Clearance Survey organised for 14 November 2023.* *– Aboriginal Clearance Survey organised for May 2024.* *– Aboriginal Clearance Survey organised for October 2024.*	*N/A.*	*N/A.*	*Ongoing consultation. Last meeting 18/10/24.*	– *Organising traditional owner representatives for 2024 drill program.* – *Organising traditional owner representatives for October 2024 Aboriginal Clearance Survey (ACS)*
EL 6367	***Bass Oil***	*Potential to impact PL licenses – depending on focus areas. Details to be provided in Program Notification* **Subsidiary companies include:** Bass Oil Cooper Basin Pty Ltd	*Petroleum exploration, extraction and production.*	***Notice of Entry*** *– Access to listed AAL's not required for upcoming exploration program (see Map 12).*	*N/A.*	*N/A.*	*29/5/23 – Contacted via email to confirm contact details.*	- *No concerns raised.* - *Consultation not required at current time.* - *No requirement to serve NOE.* – *Correspondence C/O SANTOS and Beach.*
EL 6367	***Chris Hannocks***	SA Government - National Parks & Wildlife SA	N/A.	N/A.	N/A.	N/A.		- *Consultation required if entering Strzelecki Regional Reserve.*

If any individual or group of similar affected persons were not able to be consulted, what steps were taken to consult with them?

N/A.

Provide any additional relevant information.

N/A.

SECTION C – DESCRIPTION OF THE ENVIRONMENT

Include a description of the features of the environment that are expected to be affected by the proposed operations. Each of the elements of the existing environment listed below must be described only to the extent that they may need to be considered in assessing the impacts that the proposed exploration operations are reasonably expected to have on the environment. If the element is not likely to be impacted by the operation, a statement to that effect must be included.

Where the terms and conditions of an RL include environmental outcomes, include any new baseline environmental data relevant to the control strategies or measurement criteria, and where changes to the environment are identified, provide an updated description of the environment to describe the changes.

Proximity to infrastructure and housing

Provide the following information:

- Settlements – indicate the name and distance of the nearest town, and residences within, or near the proposed exploration operations.
- Roads and tracks – indicate existing fence lines, roads and tracks, including those which are to be used in the exploration program.
- Other human infrastructure such as schools, hospitals, commercial or industrial sites, roads, sheds, bores, dams, ruins, pumps, scenic lookouts.
- Railway lines, transmission lines, gas and water pipelines, communication lines – e.g. fibre optic cables etc., if these may be impacted by the exploration operations.

Provide this information on a locality plan/map.

Settlements:

The closest townships to EL 6367 and the proposed drill sites are Moomba and Innamincka, refer **Maps 2 & 3** (**Section J**). The EL straddles two pastoral stations, Gidgealpa and Merty-Merty (**Maps 3 & 4**), and incorporates part of Australia's largest onshore oil and gas developments, the Cooper Basins Moomba field. The field is jointly owned and operated by Santos and Beach Energy with an estimated production end date of 2067.

AGE is in regular contact with the above stakeholders to advise of planned ground-works prior to proceeding with on-site exploration activities.

Roads and tracks:

Wherever possible, access to proposed drill sites will utilise the network of existing roads and tracks. Tracks will be maintained as required (in consultation with the pastoral lease holders and gas field operators) and exploration work will be conducted in ways to ensure minimal disruption to station or petroleum production activities.

Other infrastructure:

Permanent gas infrastructure, including producing and abandoned petroleum wells, above and below ground pipelines, tanks, towers, transmission lines, compressor stations, etc are commonplace, particularly in the west (Daralingie, Thurakinna and Yapeni gas fields) and east (the Big Lake gas field) of EL6367. Drill sites will not be positioned within 50m of stock watering points (bores, dams, etc) or within 50m of gas field infrastructure.

The western most portion of the licence also encompasses the Strzelecki Regional Reserve. The dominant land uses of the reserve are biological conservation, recreational tourism and petroleum exploration and production. Exploration endeavours will not be undertaken in the reserve at this time.

Land use and tenure

Using the table below, select the land tenure and land use that the proposed exploration activities will occur in. Include additional information where prompted.

Land tenure/type	Applicable
Freehold	☐
Pastoral lease	☒
Perpetual lease	☐
Crown land	☐
Mining reserve	☐
Aboriginal freehold/leasehold land (e.g. Anangu Pitjantjatjara Yankunytjatjara and Maralinga Tjarutja lands)	☐
Forestry reserve	☐
Marine parks	☐
National parks, conservation parks, conservation reserves, regional reserves*	☐
Adelaide Dolphin Sanctuary	☐
Murray Darling Basin	☐
Other*	☐

Land use	Applicable
Grazing	☒
Cultivated land	☐
Residential	☐
Township	☐
Industrial	☒
Tourism	☒
Conservation	☒
Defence activity	☐
Road reserve	☐
Sites of scientific significance (geological monuments, fossil reserves etc.)	☐
Orchard/vineyard	☐
*Native vegetation heritage agreements	☐
N/A.	
*European heritage sites	☐
N/A.	
*Other (e.g. historic mining)	
N/A.	

* Indicates more information required in field immediately below.

Describe any council policies (or out of council) or development plans that may impact the program area.

A search of PlanSA for title reference CL6175/809, the addresses which covers the proposed work area, lists the following policies following review of the planning and design code that apply to the property:

Parcel Identifier: D35579AL2025
Unit No:
Street No:
Street Name: STRZELECKI
Street Type: TRK
Suburb: GIDGEALPA
Hundred: OH(GASON)
Title Ref: CL6175/809
Plan Parcel: D35579 A2025
Crown Ref: PE002425

Policies that apply to this property:

Part 2: Zones and Sub Zones

– Remote Areas Zone

Part 3: Overlays

– Remote Areas Zone
– Gas and Liquid petroleum overlay
– Hazards (Bushfire – Outback) Overlay
– Hazards (Flooding – Evidence Required) Overlay
– Key Outback and Rural Routes overlay
– Native Vegetation Overlay

– Ramsar Wetlands Overlay
– Water Resources Overlay
– Prescribed Wells

Part 4: General Development Policies
– Resource Extraction
– Site Contamination (in addition to another 23 non-relevant policies)

Provide a description of any known plans for future land use changes by other parties.

None known. A search on the South Australian Property and Planning Atlas shows no land use changes. Future land use remains the same.

Provide any additional relevant information.

Pastoral activities, hydrocarbon exploration, extraction and production are the long-term land uses in the region.

Woomera Prohibited Area (WPA)

Will activities be conducted within the WPA	Yes ☐	No ☒	Do you have a resource exploration permit in place?	Yes ☐	No ☐
In which zone will activities be conducted?					
Does the Exploration Permit allow the operator to conduct exploration operations in the WPA?				Yes ☐	No ☐
What is the expiry date of the resource exploration permit?					
Identify closure periods that may impact on the exploration program.					
N/A					

Other land owned or controlled by the Commonwealth Department of Defence

Lands in South Australia that are owned or controlled by the Commonwealth Department of Defence, which they manage either as a training or test area, include the Port Wakefield Proof and Experimental Establishment, Murray Bridge Training Area, and Cultana Training Area.

These lands remain to be mineral land under the Mining Act 1971 (SA) and can be accessed for mineral exploration and mining subject to certain restrictions and conditions under the Defence Act 1903 (Cth) and the Defence Regulation 2016 (Cth).

Will operations be conducted within the Port Wakefield Proof and Experimental Establishment, Murray Bridge Training Area, or Cultana Training Area?	Yes ☐	No ☒
N/A		
Do you have a Deed of Access with Defence?	Yes ☐	No ☐
What is the expiry date of the Deed of Access?		
Provide the date the Range Control Officer granted access permission to conduct the proposed exploration operations. Describe the results of consultation and how any concerns raised were addressed.		
N/A		

Native title

Using the table below, describe how you have complied with the requirements of Part 9B of the Mining Act for each tenement (for further information refer to Minerals Regulatory Guidelines MG22).

Native title			
Is the proposed area of exploration located on native title land?	Yes ☒ No ☐ (If no, no further information in this section required.)		
Are there registered native title party/parties in the area of proposed exploration?	Yes ☒ No ☐	Yandruwandha Yawarrawarrka Traditional Land Owners Aboriginal Corporation RNTBC (ICN 3840).	If no, an Environment, Resources and Development (ERD) Court determination is required.

Have you negotiated a native title mining agreement?	Yes ☒ No ☐	Is the agreement registered?* Yes ☒ No ☐	NTMA for Exploration between Big Lake Uranium Pty Ltd and Yandruwandha Yawarrawarrka Traditional Landowners (Aboriginal Corporation) RNTBC (INC 3840) has been instrumented and endorsed (RI 53024) on 2 August 2023. The agreement covers EL 6367, EL 6847, EL 6848, EL 6849, EL 6902, EL 6903 and EL 6904.
Have you accepted an Indigenous land use agreement (ILUA)?	Yes ☐ No ☒	Is the ILUA registered?* Yes ☐ No ☐	N/A
Have you obtained ERD Court determination?†	Yes ☐ No ☒	Is the determination registered?* Yes ☐ No ☐	N/A

* The registration date refers to the date the agreement, determination or ILUA was registered with DEM.

† An ERD Court determination cannot be conjunctive (i.e. cannot apply to subsequent licences).

Provide any additional relevant information.

Map 2 (**Section J**) details the tenement location relative to native title determination areas. The proposed area of exploration sits wholly within the Yandruwandha Yawarrawarrka Native Title Determination area.

Landform and topography

Describe the topography of the general area affected by the exploration program. Include the susceptibility to erosion and visual attributes (steep or undulating slopes, plains, rocky outcrops, dunes, saltpans, claypans etc.).

Topography:

The tenement is located within the Coongie Interim Biogeographic Regionalisation for Australia (IBRA) region of the Cooper Basin. The habitat across the proposed drill sites is predominately dunefields with clay flats in interdunal regions. Occasional floodplains and/or ephemeral lakes are also recognised (**Figure 2 & 3, Section I**).

Vegetation:

The clay flats are dominated by chenopod shrubland of Chenopodium auricomum and Atriplex nummularia and, to a lesser extent, Eucalyptus coolabah ssp. arida, Muehlenbeckia florulenta low woodland.

The interdunal complexes are of low relief and sparsely vegetated (**Figure 1, Section I**), generally dominated by shrubs and occasional large trees/shrubs such as Coolibah (*Eucalyptus coolabah*), Whitewood (*Atalaya hemiglauca)*, Mulga (*Acacia aneura*), Dead Finish (*Acacia tetragonophylla*) and Queensland Bean *(Lysiphyllum gilvum*). Groundcovers of summer grasses are typical for this landform, such as Aristida sp. and Eragrostis sp.

On the dunes an Acacia ligulata, Atalaya hemiglauca, Hakea spp. tall shrubland dominates the red siliceous sands, while the whitish siliceous sands support Zygochloa paradoxa, Triodia basedowii hummock grassland (Gillam & Urban, 2013). **Maps 5 & 7,** Section J show the distribution of the above.

Erosion:

Most of the tenure contains low sand dunes interspersed with swales. These are susceptible to erosion where (i) vegetation is removed (ii) are cut through against the ambient wind direction or (iii) become thoroughfares for either vehicles or grazing stock. The impact, both visual and tangible, will be minimised by avoiding construction of any new tracks or drill-pads on dunes. New ground disturbance works will be strategically placed on less erosion-prone areas between dunes with minimal, if any, vegetation clearance required (Alligator's approach for drill pad clearance is to prepare with blade-up and roll vegetation as opposed to clearing) and the option of mud mat use to minimise soil disturbace will be in place. While mostly ephemeral within the region, flood plains /water course paths are susceptible to embankment erosion where disturbed. These will be documented and avoided to ensure operations are not impacted through flash-flooding.

References:

Gillam, S. and Urban, R. (2013) Regional Species Conservation Assessment Project, Phase 1 Report: Regional Species Status Assessments, Outback Region. Department of Environment, Water and Natural Resources, South Australia.

Soil and surface cover

Describe soil types and soil surface cover - e.g. gibber, rocky - in the general area affected by the exploration program. Include details on the susceptibility to compaction, erosion, dust, runoff and any other soil characteristics – e.g. acid sulphate – that may require control strategies to reduce environmental impacts during operations or rehabilitation.

Soil Types:

The clay flats are dominated by grey self-mulching cracking clays. The flood plains are of variable soil composition and may be comprised of sand, clay, or clay with a thin sandy veneer. Soils associated with channel banks are predominantly lightly textured alluvial soils with mainly silty loams or silty clay loams in the upper profile and with increasing clay at depth (Purdie, 1984). The dune and interdune corridor soil profiles are typically comprised of quartz sand and range in colour from pale brown to deep reddish-brown (Fitzsimmons, 2003).

Soil Susceptibility:

Whilst existing tracks will be utilised where possible for vehicle movement, it is likely that traverses over the flatter interdunal regions may lead to slight soil compaction. Its anticipated erosion, dust and other impacts on the region's soils will be negligible.

References:

Purdie, R. (1984). Land systems of the Simpson Desert region.

Fitzsimmons, K. E. (2003). Longitudinal and transverse dunes of the Lake Eyre Basin.

Surface water

Will the proposed program interfere with surface water bodies and natural drainage (e.g. drainage lines, creeks, floodplains, wetlands)? If yes, describe the potential interference and surface water bodies and natural drainage on maps. If no, indicate why.	Yes ☐	No ☒
Ephemeral drainage patterns exist within the work area (**Map 3, Section J**). No interference of drainage systems is proposed with all drill sites to be modified should they fall within a previously unidentified drainage line. Locations will be sighted by senior field personnel to ensure drainage and surface water sites are not disturbed.		
Is the program area located within water protection areas defined under the *River Murray Act 2003*? If yes, provide the name(s).	Yes ☐	No ☒
N/A		
Is the program area located within any prescribed watercourses or prescribed surface water areas under the *Landscape South Australia Act 2019*? If yes, provide the name(s).	Yes ☐	No ☒
N/A		

Groundwater

Is groundwater likely to be intersected when conducting the exploration program? If yes, use the table below to describe the expected groundwater (hydrogeological) conditions, and identify groundwater aquifers in the exploration area(s) that may be affected. Indicate the approximate depth of drillholes in each area. Copy and paste a new table for each area where different groundwater conditions are expected. If no, provide evidence or any supporting information demonstrating this.	Yes ☒	No ☐

Shallow, unconfined groundwater (i.e. the water table) will be intersected when conducting the exploration program. Drill holes will be to a maximum depth of 350 meters and will also intersect Tertiary aquifer systems (see below). Due to the lack of groundwater information from the target formations, AGE will continue to document groundwater information encountered to aid subsequent EPEPR applications.

Well data in the South Australian WaterConnect database and well picks from PEPS indicate the subsurface stratigraphy to include the Namba (Neogene) and Eyre (Palaeogene) formations. These units host variably confined aquifers within unconsolidated/semi-consolidated sedimentary sequences.

Regional Setting:

Mesozoic Aquifers (J-K aquifer)

The Cadnaowie Formation and Algebuckina Sandstone are the main aquifers in the Cooper subregion and represent both artesian and non-artesian systems. DEW factsheet summarising the 2020-21 Water Resources Assessment for the Far North PWA, indicates the great artesian basin is part of a single hydrogeological unit called the Jurassic-Cretaceous (J-C) aquifer. The main confining layers of the aquifer units are comprised of a regionally variable set of sediments from Triassic, Palaeozoic or Proterozoic age.

- **These aquifers will not be intersected in the proposed drill program**.

Cenozoic Aquifers (Lake Eyre Basin)

Sparse hydrogeological data suggests that there are at least two Cenozoic aquifer systems, a shallow system (Namba Formation aquifer), approximately 60 - 80 m thick with highly variable salinity, and a deeper system (Eyre Formation aquifer) with more consistent salinity down to about 300 m (Evens et al., 2020). These two systems are recharged both by upward leakage from the deeper artesian Mesozoic aquifers and rainfall infiltration. Enhanced recharge to the shallower Cenozoic aquifers possibly occurs along creek-lines and lakebeds, especially during episodic flood events. Discharge from the Tertiary aquifers is expected to primarily occur to saline lake systems such as Lake Eyre or the numerous smaller lakes that populate the region (DESIQ, 2020).

The Eyre Formation

The Eyre Formation is a relatively lithological consistent aquifer characterised by a silcrete overprint at the top of the formation (Alley, 1998; Callen et al., 1995). This silcrete is a potentially impermeable barrier to upward groundwater migration. The thickness of this Eyre Formation aquifer ranges from about 12 to 60 m over the Weena Trough. However, there are greater thickness variations over the Tenappera Trough (thicker) and Murteree High (thinner) areas. Water salinity is brackish to saline (Smith et al., 2020).

Stratigraphic picks from 68 petroleum wells indicate the Eyre Formations shallowest point across EL 6367 is 180 metres at Lowanna 1 (500 meters northeast of drill site 9) and 185 metres around Namur 1, 2 and 3 (1.2 km northeast of drill site 7). The Eyre formation aquifer is confined at all drill sites proposed in this PEPR, but aquifer does become unconfined where the formation shallows at the basin margins. Structural contouring modelling of well picks indicate the formation shallows to 160 metres in the vicinity of drill sites 4 and 8, see **Map 13, Section J** for details.

Namba Formation

Across the Weena Trough the Namba Formation and Quaternary sediments host the regional water table. Salinity of this aquifer range between 5000 mg/L and 10 000 mg/L. The Namba Formation is comprised of localised linear aquifers within aquitards of fine-grained lacustrine sediments (Smith et al., 2016). Water levels are between 9 to 92 m below ground level across the proposed work area, occurring close to sea level. A map of boreholes in the area is provided in (**Map 8, Section J**).

- **Intersecting confined conditions in the Namba and Eyre formations needs to be suitably risk managed. As such Alligator Energy employs an experienced licenced Class 2 driller/drilling supervisor and have in place contingencies for encountering multi-aquifer and/or confined conditions. See Section F 'Management of Environmental Impacts' for further details.**

Quaternary units

The remainder of shallow groundwater interaction includes alluvial aquifers, permeable sandy plain aquifers and inland sand dunefield aquifers. Alluvial aquifers in these catchments are characterised by brackish, ephemeral groundwater connectivity. Groundwater persistence and interaction with the surface is dependent on recent rainfall and/or flooding. Many wetlands are associated with these aquifers (DESIQ, 2020).

References:

Alley NF 1998. Cainozoic stratigraphy, palaeoenvironments and geological evolution of the Lake Eyre Basin. Palaeogeography, Palaeoclimatology, Palaeoecology 144:239–263.

Callen RA, Alley NF and Greenwood DR 1995. Lake Eyre Basin. In JF Drexel and WV Preiss (Eds), The geology of South Australia, Volume 2, The Phanerozoic. Bulletin 54:189–194. Geological Survey of South Australia.

DESIQ (2020). Department of Environment, Science and Innovation, Queensland; Lake Eyre Basin Catchment Story. Retrieved from https://wetlandinfo.des.qld.gov.au/wetlands/ecology/processes-systems/water/catchment-stories/transcript-lake-eyre-basin/overview.html.

Evans TJ, Martinez J, Lai ÉCS, Raiber M, Radke BM, Sundaram B, Ransley TR, Dehelean A, Skeers N, Woods M, Evenden C and Dunn B (2020) Hydrogeology of the Cooper GBA region. Technical appendix for the Geological and Bioregional Assessment Program: Stage 2. Department of the Environment and Energy, Bureau of Meteorology, CSIRO and Geoscience Australia, Australia.

Smith M, Pavey C, Ford J, Sparrow A, Karim F and Radke B (2016) Conceptual modelling for the Cooper subregion. Product 2.3 for the Cooper subregion from the Lake Eyre Basin Bioregional Assessment. Department of the Environment and Energy, Bureau of Meteorology, CSIRO and Geoscience Australia, Australia.

Description of the locality/area where different groundwater conditions may be encountered					
Different ground water conditions are not expected throughout the program, however, the 2025 drilling program will include a Class 2 driller/drilling supervisor at all times to manage and control groundwater conditions.					
Formation age and/or stratigraphic unit	**Stratigraphic intervals (depth range) (m)**	**Aquifer formation name**	**Aquifer interval/thickness (from–to) (m)**	**Type of aquifer(s) intersected (e.g. unconfined, confined, artesian)**	**Provide aquifer salinity, depth to water level and any other relevant comments**
Quaternary units.	Surface – 40m	Pliocene–Quaternary	Surface – 40m	Unconfined Aquifer	***Unit Number*** *6940-66* *6940-2* *6741-24* *6941-649* *6941-24* *6941-669* *6941-78* *6841-74* *6941-81* *6941-85* *6940-45* *6941-74* *6841-71* *6941-39* *6841-73* *7040-69* *6941-100* *6941-76* *6941-470* *7040-27* *7041-47* *7041-606* *6940-75* *6840-18* *7041-46* *7040-25* *6941-648* *7041-291* *6941-184* *6941-295* *6941-77* *6941-72* *7041-41* *6941-172* *7041-193* *7041-39* *6940-64* *6940-12* *7041-42* *7041-128* *6941-75* *7041-38* *6940-70* *7040-4* *6940-44* *6940-74* *7041-28* *7041-512* *7041-515* *7040-55* *7041-529* *6940-65* *7041-48* *7040-54* *6940-73* *7041-31* *7041-292* *7041-32* *7041-530* *6941-654* *6841-56* *7041-30*
Late Oligocene-Miocene Namba Formation (Lake Eyre Basin)	40 – 205m avg. (max depth 253 m)	Palaeogene – Neogene aquifers. **Namba Fm Aquifer**.	Between 18 – 253m depth	Unconfined to variably confined within primary work area.	
Late Palaeocene-Mid Eocene (Lake Eyre Basin)	205 – 278m avg. (max depth 340m)	Palaeogene – Neogene aquifers. **Eyre Fm Aquifer.**	Between 205 – 340m depth	Variably confined (confined within primary work area).	
Late Cretaceous Winton Formation (Eromanga Basin)	278 – 900m avg. (max depth 1273m)	**Mackunda – Lower Winton Aquifer**	> 238m depth	Confined lenticular aquifer.	

					6840-9 *7040-2* *6640-20* *6640-23* *7041-100* *6741-1* *7041-15* *7041-4* *6841-139* *6841-49* *6941-10* *6941-11* *6841-1* *6941-14* *7041-11* *6941-12* *6941-25* *6941-9* *6941-8* *6941-7* *7041-9* *6640-9* *6741-22* *6840-10* *6841-59* *6841-70* *6940-4* *6940-5* *6941-178* *6941-23* *6941-38* *6941-41* *6941-647* *6941-73* *7040-56* *7041-242* *7041-243* *7041-244* *7041-417*

Provide the environmental value of each aquifer present determined according to the current Environment Protection (Water Quality) Policy.

Groundwater with a background TDS level of 3,000 mg/L or more, but less than 13 000 mg/L have an environmental value of *Primary industries — livestock drinking water* and *Primary industries — aquaculture and human consumption of aquatic foods* as defined by the Environment Protection (Water Quality) Policy 2015. All aquifers likely to be intersected are of this environmental value.

Provide a description of the existence, location and value of all Groundwater Dependent Ecosystems (GDEs) within and immediately surrounding the project area.

A search of the National Groundwater Dependent Ecosystem Atlas shows known GDEs within the proposed work area. A low potential GDE from national assessment exists. Aquatic GDEs (Springs) will be assessed and avoided (**Map 8, Section J**).

The salinity levels are generally considered to be too high to sustain Stygofauna (Hancock & Boulton., 2009). South Australian Stygofauna typically require salinity to be less than 1500 µS/cm EC, have a pH range of 4.3 to 7.37 and the geology to have the presence of cavities, fractures or interstices (Hancock P.J. and Boulton A.J., 2009).

Reference:

Hancock P.J. and Boulton A.J. (2009). Sampling groundwater fauna: efficiency of rapid assessment methods tested in bores in eastern Australia. Freshwater Biology 54:902-917.

Is the proposed program located within a prescribed wells area or prescribed water resource area? If yes, provide the name of the area.	Yes ☒	No ☐
Far North Prescribed Wells Area. See https://www.landscape.sa.gov.au/saal/water/managing-water-resources/far-north-prescribed-wells-area-water-allocation-plan		

Provide any additional information, if required.

The Far North Prescribed Wells Area (PWA) is located in the South Australian Arid Lands Landscape Region. Groundwater resources are managed under the principles in the Water Allocation Plan for the Far North PWA.

Native vegetation

Will you be working within areas of native vegetation? If yes, provide the following information: • description of the formation and structure of vegetation in the area (e.g. woodland, shrubland, grassland) • list of the dominant species. If no, indicate why you will not be working within areas of native vegetation?	Yes ☒	No ☐

- Naturemaps identified a minimum of 58 native flora species across the proposed exploration area.
- Ground cover is variable, being a mix of short-lived perennials and herbaceous species. The interdunal complexes in the Northern parts of the EL are of low relief and sparsely vegetated, generally dominated by Coolibah (*Eucalyptus coolabah*) with occasional large trees/shrubs such as Whitewood (*Atalaya hemiglauca*), Mulga (*Acacia aneura*), Dead finish (*Acacia tetragonophylla*) and Queensland Bean *(Lysiphyllum gilvum). Drill sites will be in* open scrubland with the main vegetation consisting of lignum and old man saltbush. In areas of higher inundation there is a higher proportion of lignum.
- A protected matters report search (14 Feb 2023) has been completed to support information provided on listed Flora and Fauna within the EPBC act supplied as **Appendix 1** – Protected Matters Report.
- One EPBC act listed species of plant was identified as likely to occur in the area, the nationally Endangered *Frankenia plicata,* common name Sea heath.
- A search of NatureMaps (**Table 1, Section J**) indicates there is one nationally listed plant species. Field staff will be alerted to rated/protected species with environmental contractors to provide a check book for species to be aware of.

Significant habitats and flora

If you are working within areas of native vegetation, use the table below to list any significant habitats and any rare or endangered flora species located or reported to have been in the area that may be impacted by the proposed program. Include known sightings of listed species on a locality plan/map.

Species/habitat	Common name	NPW Act rating*	EPBC Act rating†
Frankenia plicata	Sea Heath		Endangered

* *National Parks and Wildlife Act 1972* (NPW Act) conservation status includes extinct, endangered, vulnerable, threatened and rare.

† *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) listings include extinct, extinct in the wild, critically endangered, endangered, vulnerable and conservation dependent.

Weeds and pathogens

Provide information of the extent the area is affected or potentially affected by weeds and pathogens (e.g. phytophthora; buffel grass *Cenchrus ciliaris*).

Weeds recorded on the Naturemaps database include:

- *Cenchrus ciliaris* (Buffel Grass)
- *Citrullus colocynthis*
- *Brassica tournefortii* (Wild turnip)
- and *Heliotropium supinum (*Potato weed)

Additionally, Santos provided Alligator Energy their Production and Processing Operations Environmental Impact Report 2023 and additional weed species were recorded in this document, these include;

Athel Pine (*Tamarix aphylla*) ▪ Black Nightshade (*Solanum nigrum*) ▪ Caltrop (*Tribulus terrestris*) ▪ Common Sow-thistle (*Sonchus oleraceus*) ▪ Common Verbena (*Verbena officinalis*) ▪ Creeping Heliotrope (*Heliotropium supinum*) ▪ Grain Sorghum (*Sorghum bicolor*) ▪ Mimosa Bush (*Acacia farnesiana*) ▪ Noogoora Burr (*Xanthium strumarium*) ▪ Prickly Acacia (*Acacia nilotica*) ▪ Ruby Dock (*Acetosa vesicaria*) ▪ Wandering Speedwell (*Veronica peregrina ssp. xalapensis*).

Of these Buffel Grass, Athel Pine, Caltrop, Noogoora Burr and Prickly Acacia are declared weeds under the *Landscape SA act 2019*. Government guidelines are to be followed should these weeds be identified within the work area or along access routes.

Fauna

Describe the native and feral fauna that may be present in the application area, including feral species.

NatureMaps and the EPBC Act protected matters report (14 Feb 2023) across the Project area identified:

- Two mammal species have been recorded, both being listed as Vulnerable nationally and under NPW ACT SA.
- Three reptile species have recorded as being listed as Rare under SA NPW ACT.
- 27 native bird species have been observed, with four being of conservation significance.

However, the following species of conservation significance were identified in the broader regional study area during historic government surveys; Environment Protection and Biodiversity Conservation Act (Nationally) listed:

- Curlew Sandpiper (*Calidris ferruginea*) listed as critically endangered.
- Grey Falcon (*Falco hypoleucos*) listed as vulnerable.
- Plains Wanderer (*Pedionomus torquatus*) listed as critically endangered.
- Night Parrot (*Pezoporus occidentalis*) listed as endangered.
- Thick-billed Grasswren (*Amytornis modestus*) listed as vulnerable.
- Kowari (*Dasyuroides byrnie*) listed as vulnerable.
- Dusky Hopping-mouse (*Notomys fuscus*) listed as vulnerable.
- Plains Rat (*Pseudomys australis*) listed as vulnerable.

National Parks and Wildlife Act 1972 (SA) listed:

Scientific name	Common Name	NPW act rating - SA
Anhinga novaehollandiae novaehollandiae	Australasian Darter	R
Antigone rubicunda	Brolga	V
Ardea intermedia plumifera	Plumed Egret	R
Ardeotis australis	Australian Bustard	V
Arenaria interpres interpres	Ruddy Turnstone	R
Biziura lobata menziesi	Musk Duck	R
Calidris ferruginea	Curlew Sandpiper	E
Cladorhynchus leucocephalus	Banded Stint	V
Coturnix ypsilophora australis	Brown Quail	V
Elanus scriptus	Letter-winged Kite	V
Falco hypoleucos	Grey Falcon	R
Falco subniger	Black Falcon	R
Grantiella picta	Painted Honeyeater	R
Hamirostra melanosternon	Black-breasted Buzzard	R
Hieraaetus morphnoides	Little Eagle	V
Myiagra inquieta	Restless Flycatcher	R
Neophema chrysostoma	Blue-winged Parrot	V
Phaps histrionica	Flock Bronzewing	R
Plegadis falcinellus	Glossy Ibis	R
Podiceps cristatus australis	Great Crested Grebe	R
Spatula rhynchotis	Australasian Shoveler	R
Stictonetta naevosa	Freckled Duck	V
Tringa glareola	Wood Sandpiper	R
Notomys fuscus	Dusky Hopping-mouse	V
Pseudomys australis	Plains Mouse	V

Aspidites ramsayi	Woma Python	R
Austroblepharus kinghorni	Blacksoil Skink	R
Pseudonaja guttata	Speckled Brown Snake	R

A search of NatureMaps rated flora and fauna records (**Table 1, Section J**) indicates there are limited recorded rated species within or proximal to the proposed work area. Field staff will be alerted to rated/protected species with environmental contractors to providing a check book for species to be aware of.

A protected matters report search has been completed to support information provided on listed Flora and Fauna within the EPBC act with a 50 km radius to allow for the range of avian species supplied as **Appendix 1** – Protected Matters Report.

Significant fauna

Where possible, using the table below, list any rare or endangered fauna species located or reported to have been in the area that may be impacted by the proposed program. Include known sightings of listed species on a locality plan/map.

Species	Common name	NPW Act rating	EPBC Act rating
Calidris ferruginea	Curlew Sandpiper		*Critically Endangered*
Pedionomus torquatus	Plains Wanderer		*Critically Endangered*
Falco hypoleucos	Grey Falcon	Rare	*Vulnerable*
Pezoporus occidentalis	Night Parrot		*Endangered*
Aphelocephala leucopsis	Southern Whiteface		*Vulnerable*
Dasyuroides byrnie	Kowari		*Vulnerable*
Notomys fuscus	Dusky Hopping-mouse	Vulnerable	*Vulnerable*
Pseudomys australia	Plains rat		*Vulnerable*

Note: NPW Act conservation status includes extinct, endangered, vulnerable, threatened and rare.
EPBC Act listings include extinct, extinct in the wild, critically endangered, endangered, vulnerable and conservation dependent.

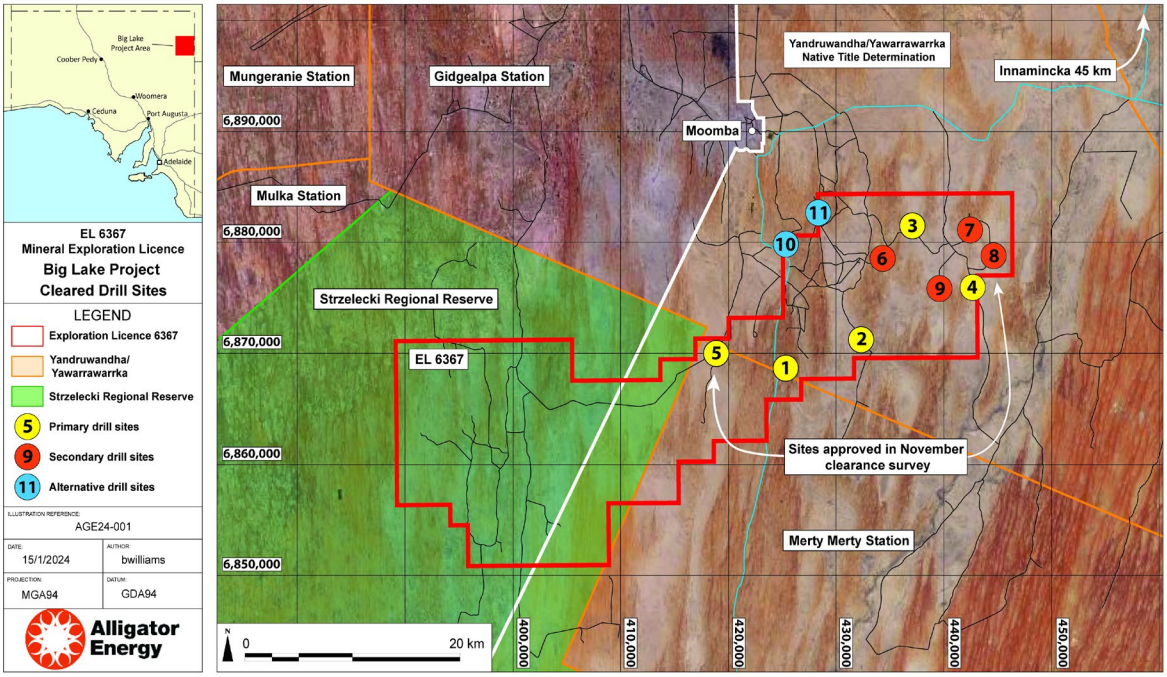
Environmentally sensitive locations

Are there any environmentally sensitive locations within or close to the proposed exploration area (e.g. areas having particular ecological, cultural, scientific, aesthetic or conservation value)? If yes, provide a description of identified environmentally sensitive location(s). Mark these areas on a locality plan to identify any areas of conflict so that access roads or other activities can be planned and located effectively.	Yes ☒	No ☐
Coongie Lakes – within 50 km. Strzelecki Creek Wetland System – within 50 km.		
Are you likely to impact on the environmentally sensitive area? If yes, detail the likely effects the proposed program may have.	Yes ☐	No ☒
N/A		
Include a statement concerning whether or not an Aboriginal heritage survey has been conducted by the proponent and if so, the results of the survey.		

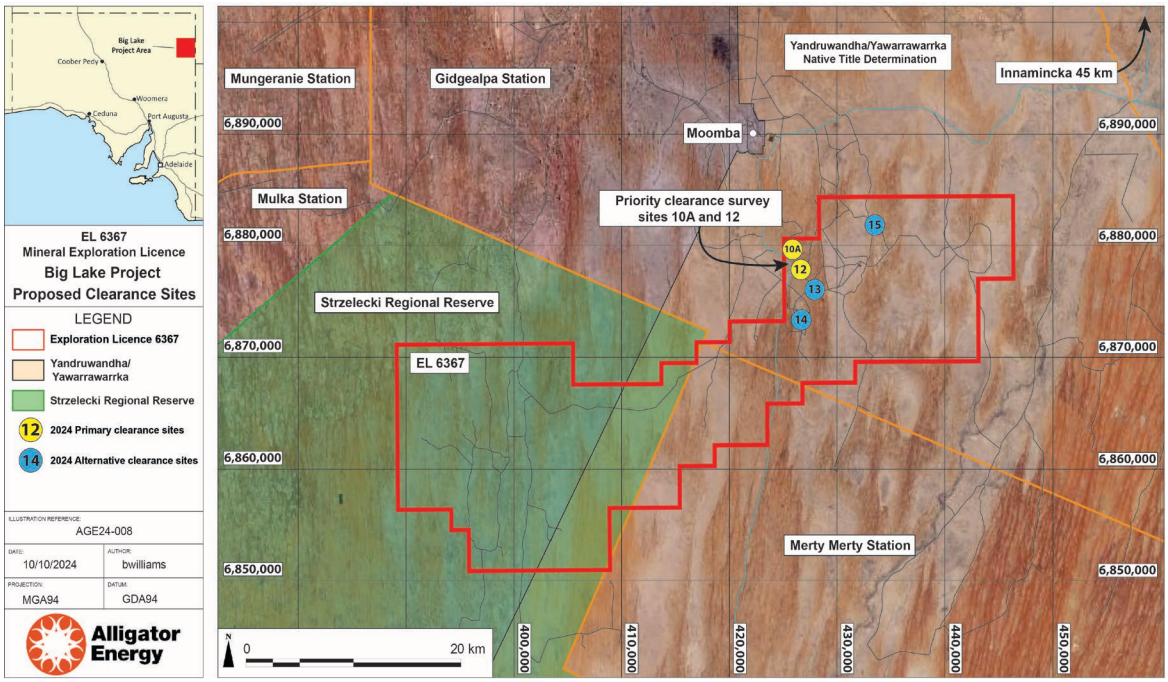
– An Aboriginal Heritage Survey was completed between the 16th and 20th of November 2023. 11 different drill sites were cleared (**Map 1A**) with only two areas (both of 30 metres radius) excluded from proposed drilling activities. A report has been prepared by Australian Heritage Services (AHS).

– An Aboriginal Heritage Survey was completed on the 13th of April 2024 for an exploration field camp. 1 site was cleared with no areas excluded.

– An Aboriginal Heritage Survey was completed between the 26th and 29th of October 2024. 5 different drill sites were cleared (**Map 1B**) with multiple areas excluded from proposed drilling activities. A report is currently being prepared by Australian Heritage Services (AHS).



Map 1A: Drillsites approved during November 2023 clearance survey.



Map 1B: Drillsites approved during October 2024 clearance survey.

SECTION D – DESCRIPTION OF PROPOSED EXPLORATION OPERATIONS

Each of the elements listed below must be described only to the extent that they apply to the proposed exploration program.

Equipment and personnel requirements

Using the table below, describe the equipment, size and composition of field crews, and proposed working hours/days required to conduct the proposed program.

Type of personnel	Number	Name of contractor company (if applicable)
Geologists	3	AGE employee
Land access/environmental	1	AGE employee (Environmental Manager)
Field assistants/technicians	3	AGE employee/Contracted
Drilling crew	5	2 x Air Core crew, 3 x Rotary Mud crew
Site preparation and rehabilitation	3	AGE employee/Contractor/landholder
Other – Downhole survey contractors	2	Borehole Wireline Pty Ltd and Geodata Instruments (PFN)

Shifts worked per day	Hours worked per day	Days worked per week
1	12	7

Equipment type	Owner/operator	Description/capacity	Activity/purpose
Air Core Drilling			
4x4 vehicles x 3 (Landcruiser ute or equivalent)	Alligator Energy Hire vehicles	2-4 persons 4x4 and utility support vehicles	Personnel and equipment transport
Truck mounted air core drill rig	Drilling contractors	Truck mounted air core drill rig capable of drilling to ~150 m	Primary drilling technique
Drill rig support truck (4x4)	Drilling contractors	Larger flatbed vehicle with drilling support equipment	Support truck for drilling equipment and rods
4x4 Ute (Hilux or similar) x 2	Drilling contractors (TBC)	2-4 persons 4x4 and utility support vehicles	Personnel and equipment transport
Caterpillar 4x4 backhoe loader or equivalent	Alligator Energy Hire vehicle	1 person Caterpillar 438D 4x4 or equivalent	Sump excavation and rehabilitation (shared between rigs)
4x4 Landcruiser/small downhole geophysical logging truck	Contractor (TBC)	Downhole survey vehicle	Contract team for downhole surveys. Gamma analysis proposed
4 x 4 rigid tray truck	Contractor (TBC)	General haulage/consumables supply to and from drill sites	
Rotary Mud Drilling			
4x4 vehicles x 2 (Landcruiser /trayback or equivalent)	Alligator Energy Hire vehicles	2-4 persons 4x4 and utility support vehicles	Personnel and equipment transport
Truck mounted Rotary Mud drill rig	Drilling contractors	Truck mounted air core drill rig capable of drilling to ~350 m	Primary drilling technique
Drill rig support truck (4x4-6x6)	Drilling contractors	Larger flatbed vehicle with drilling support equipment.	Support truck for drilling equipment and rods
10,000 litre water truck	Drilling contractors (TBC)	Truck mounted water tank for drilling requirements	Water supply (shared between rigs)
Caterpillar 4x4 backhoe loader or equivalent	Alligator Energy Hire vehicle	Shared between rigs	Sump excavation and rehabilitation (shared between rigs)
4x4 Landcruiser/small downhole geophysical logging truck	Contractor (TBC)	Downhole survey vehicle	Contract team for downhole surveys. Gamma analysis proposed

Provide any additional information, if required.

Drill teams will work on a two week on, one week off roster

Low impact exploration activities

Will low impact exploration operations be conducted that are not covered by the Generic program for environment protection and rehabilitation – low impact mineral exploration in South Australia, (generic PEPR)? If yes, describe each type of low impact operations proposed.	Yes ☒	No ☐
Airborne geophysical surveying may be considered for better targeting in areas where detailed seismic, drill or other geoscience datasets are limited.		

Drilling activities

Will exploration drilling activities be conducted? If yes, fill out the below table	Yes ☒	No ☐

Tenement	Drilling type	Maximum number of drillholes	Maximum drillhole depth (m)	Maximum number of sumps required at each site	Maximum size of sumps (length x depth x width) (m^3)	Average size of each drill pad* (m^2) (no excavation required)	Number of sites requiring pad excavation	Average volume (m^3) of material to be excavated (excluding sumps)
EL6367	Mud – Rotary	40	350	2	< 9 m * 2 m * 1.5m (27 m^3)	< 25m * 25m (625m^2)	Nil	N/A
EL6367	Aircore	80	200	1	< 4 m * 2 m * 1.5 m (12 m^3)	< 25m * 25m (625m^2)	Nil	N/A
TOTAL		**120**	**30,000**	**160**	**3,120 m^3**	**75,000 m^2**	**Nil**	**N/A**
		Total number of drillholes (add each row to calculate the total).	Total metres proposed (maximum number of holes x average depth for each row, then add each row to calculate the total).	Total number of sumps (maximum number of sumps x drillsites for each row, then add each row to calculate the total).	Total volume of sumps (maximum size of sumps x number of sumps for each row, then add each row to calculate the total).	Total area of disturbance (number of holes x average size for each row, then add each row to calculate the total).	Total number of pads requiring excavation (add each row to calculate the total).	Total volume of material to be excavated (number of sites requiring excavation x average volume for each row, then add each row to calculate the total).

* The footprint includes all areas of disturbance associated with the drillsite.

Drillsite preparation

If exploration drilling activities are proposed, describe the methods used to prepare sites, including vegetation clearance requirements, site levelling and digging of sumps.

Vegetation clearance requirements and site levelling:

- All Air Core drill sites are adjacent to existing and historic tracks to minimise the clearing of new tracks.
- Rotary Mud drill sites will be both adjacent to existing tracks and on interdunal flats with no track access.
- It is anticipated that, in a worst-case scenario, proposed drill sites and access tracks will be prepared by simply using a backhoe blade-up approach to scrape the sparse vegetation where required. Additionally, mud mats may also be used.
- Any cleared vegetation/debris will be pushed to one end of the drill site, so it can be easily salvaged and re-spread during the rehabilitation process.
- On a local scale there will be some degree of flexibility siting the proposed drill collars. It is intended that wherever feasible, drill collars will be placed on the flattest terrain possible, thereby minimising the need for excavation and levelling of terrain.
- Drill sites are located within the interdunal corridor. There is no drilling on dune ridges.
- Where dune fields exist, vehicles will follow interdunal corridors wherever possible. Personnel will avoid travelling on clay pans to minimise surface disturbance.
- Topsoil will not be removed in the preparation of drill pads or tracks.

Procedures for the construction and closure of sumps:

- At each site requiring a sump the machine operator takes a single bucket scoop and examines the material to decide, on the basis of colour and texture, what constitutes topsoil. The objective is to identify surficial soil horizon materials which have the potential to contain organic matter and seed resources.
- The topsoil is then removed from the working area and stockpiled in a location where it will not be contaminated by other materials or damaged by vehicle movements.
- Each Air Core sump will be approximately L <4 m x W 1.5 m x D 2 m and will be designed with one sloped wall to allow for fauna egress.
- Each Rotary Mud sump will be approximately L <9 m x W 1.5 m x D 2 m and will be designed with one sloped wall to allow for fauna egress.
- Each sump will be large enough to contain the drill cuttings anticipated from the hole and have sufficient depth that mineralised material returned from the drill hole will be buried at least 1 m below the surface.
- Mineralised drilling returns will be contained within inground sumps and cuttings buried to at least 1 m within drill site sumps in accordance with the radiation protection guidelines on mining in South Australia
- On completion of drilling, sumps are left to dry until the material in the bottom is both thick and viscous or dried/cracked and not in a condition where it will splash or move significantly during backfill.
- The material excavated from the sumps is returned as far as is practicable in the reverse sequence to its excavation.
- A slight rise over the top of the infilled sump allows fill to naturally settle and compact over time preventing localised ponding.
- The stockpiled topsoil is then spread out across the site by machine, and the area hand-raked if needed.
- A photographic record of each site will be taken before drilling commences and a subsequent rehabilitation photo taken afterwards.

Drillhole construction and decommissioning

Have the personnel responsible for implementing the proposed program read and understood the Earth Resources Information Sheet M21, Mineral exploration drillholes – general specifications for construction and backfilling?	Yes ☒	No ☐

Describe how drillholes will be constructed, including the casing material to be used, depth of casing, if the casing will be cemented, cementing intervals and the class of driller that will install the casing.

Air core drilling:

- Air Core drilling utilises high-pressure air and dual walled rods to penetrate the ground and return the sample to the surface through the inner tube. The ground is cut using a steel or tungsten blade type bit.
- Air Core drilling in the forthcoming drill program will require **no casing or cementing during construction**.

Rotary mud drilling:

- A common method used in mineral exploration and constructing water bores. The drilling is advanced by a spinning rod string with a rotary bit cutting the rock at depth. Fluid (water and mud additives) is pumped down the hole during drilling to return cuttings to the surface. Muds and additives in the fluid form a coating around the drill hole wall as it progresses to stabilise the hole to enable downhole geophysical wireline logging.

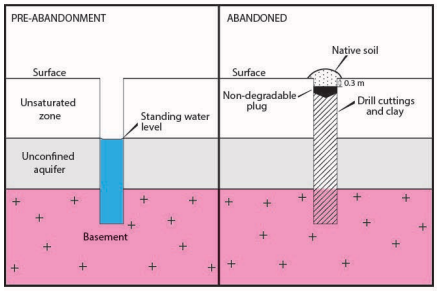
When describing drillhole decommissioning requirements, include the materials to be used, stratigraphic intervals where cement plugs will be placed, if the casing will be removed and when decommissioning will occur after drilling is completed.

Decommissioning (see figure overleaf):

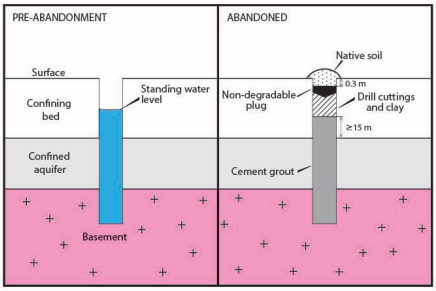
- Materials that will be used while decommissioning drillholes may include drillhole cuttings, cement grout (where confined aquifer conditions are encountered) and possibly a non-degradable plastic top of hole plug.
- Air Core drillholes will be cemented from bottom of hole to surface to avoid any uncertainty in identifying whether aquifers encountered are confined or unconfined. Holes will not be backfilled with drill cuttings.
- Mud Rotary holes will have each separate aquifer cemented with a grout plug and then backfilled. The plug will be emplaced 20 m below the aquifer and extend through the aquifer back into the overlying confining bed with a total minimum length of 20 m of grout.
- Pre and post radioactivity (gamma) of all drill sites using a scintillometer will be undertaken and recorded at the collar location and at 5 m intervals in both a north/south and east/west direction to 25 m.
- There is no intention for future re-entry, and as such, drillholes will **not** be cased.

Where confined or artesian conditions are expected, include a schematic diagram demonstrating how drillholes will be constructed and decommissioned

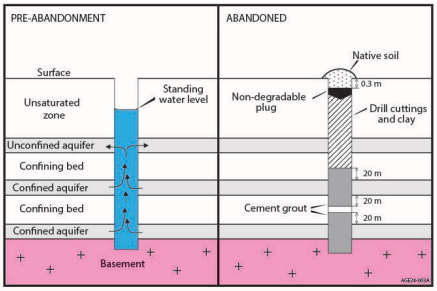
- Confined aquifers will be intersected while drilling both Air Core and Rotary Mud. As such Alligator Energy will employ an experienced licenced Class 2 driller/drilling supervisor and have in place contingencies for encountering multi-aquifer and/or confined aquifer conditions
- Artesian conditions will not be encountered in the proposed drilling program.



Above: Drillholes which penetrate a single unconfined aquifer will be backfilled with surplus drill cuttings, clean fill containing clay, or cement.



Above: Drillholes which penetrate a single confined aquifer will be cemented from the bottom of the hole to a minimum of 15 metres into the confining bed above, then backfilled.



Above: Drillholes which penetrate more than one aquifer will have each separate aquifer cemented with a grout plug and then backfilled. The plug will be emplaced 20 m below the aquifer and extend through the aquifer back into the overlying confining bed with a total minimum length of 20 m of grout. Shallow holes (<200 m) can be backfilled from the bottom back to surface with grout.

Costeans and bulk sample disposal pits

Will costeans/bulk sample disposal pits be required for the proposed program? If yes, fill out the table below.	Yes ☐	No ☒

Tenement	Number of costeans/pits	Size of costean (length x width) (m^2)	Average depth (m)	Volume excavated (m^3)	Total volume excavated (m^3) (number of costeans/pits x volume)	Total area of disturbance* (length x width) (m^2)
TOTAL						
	Total number of costeans/pits (add each row to calculate the total).				Total volume of material to be excavated (add each row to calculate the total)	Total area of disturbance (number of costeans/pits x area of disturbance for each row, then add each row to calculate the total).

*Includes storage of excavated material at the site (e.g. topsoil and subsoil segregation).

Costeans and bulk sample disposal pit preparation

If costeans/bulk sample disposal pits are required, describe site preparation methods, vegetation clearance, and safety and maintenance requirements.

NA

Sample management

Describe the size of samples collected (including drilling samples and bulk sampling), collection methods, materials used when collecting the sample, sample disposal methods (including removal of sample bags), safety management and any other sample management requirements at the exploration site (e.g. tarps or matting used to contain cuttings). Include requirements for on-site geological sample management (splitting of archive samples, bag farms, core processing and storage).

Air Core Samples:

- The sample laydown area is located outside the driller/rod handler working zone at the rear of the rig.
- Air core cuttings (the sample) are collected and laid out in large green sample bags representing 1m intervals. The bagged samples are then measured for natural gamma radiation.
- A representative subset of each 1 m sample is placed in both a chip tray for geological logging and a calico bag (approximately 500g) for geochemical analysis.
- On completion of drilling and after logging the remaining sample is returned to the hole or placed in the sump.
- Emptied sample bags are removed and the site rehabilitated.
- There is no requirement for splitting of samples, bag farms, core processing or storage.

Rotary Mud Samples:

- Samples of rotary-mud drill cuttings (the sample) are collected by shovel at the drill collar spill over point and laid out in small piles (~3 handfuls) representing 1 or 2m intervals.
- The sample laydown area is located well outside the rod drop zone.
- The samples are placed on industrial plastic of sufficient size to contain the anticipated number of samples for that drillhole.
- The samples are measured for natural gamma radiation, and a subset of each 2m sample is placed in a chip tray for geological logging by the geologist.
- On completion of drilling and after geological logging the remaining sample material is returned to the hole sump and the plastic retained for re-use and the site rehabilitated.

Access routes to work areas

Will existing tracks require upgrading and/or maintenance? If yes, detail the work required to upgrade/maintain existing tracks.	Yes ☐	No ☒
– As far as possible, existing tracks will be utilised for access with the approximately two thirds of drilling to be located on, or very close to, established and historic routes. – No major track works are anticipated. – Where minor track works are required details of clearing requirements and remediation process will be documented. **Dust and road damage:** – The impact of AGE vehicle movements to the roads in the Big Lake region will be negligible in comparison the amount of traffic already utilising the same roads. Traffic in the areas of operation typically includes light and heavy vehicles, road trains, water haulage trucks, oil and gas equipment movements on flat bed semis, excavation machinery and drill rigs, etc. – On less trafficked roads and tracks that solely AGE are utilising for drill site access the following procedures may be implemented: - Strict slow speed limits (<20km/hr) to minimise dust and erosion where repeated track use occurs. - Dust suppression using a water truck may also be employed should dust conditions become problematic or pose a health or safety hazard on less.		
Will access be required across adjoining tenements? If yes, detail the method(s) for gaining access, and if an agreement is in place with all stakeholders. Include the total area of disturbance required (i.e. length (km) and width (m) of tracks) and provide on a locality map.	Yes ☒	No ☐
Access to across adjoining tenements: – Access across adjoining tenements will be on established tracks and gazetted roads. **Access to coincident Petroleum Exploration Licences (PEL's):** – Stakeholders have been contacted by phone regarding planned activities, emailed a seeking consent to undertake works request and will be emailed a Notice of Entry as per section 58A of the Mining Act to undertake advanced exploration operations. – No maintenance or new track construction is planned.		
Will access off existing tracks be required? If yes, detail the method(s) for gaining access and if vegetation clearance is required. Include the total area of disturbance (includes drill traverses and seismic lines) required off existing tracks (i.e. length (km) and width (m) of new tracks).	Yes ☒	No ☐
– Final drill locations are yet to be confirmed, however, the existing track infrastructure within the work area is extensive and will be utilised as much as possible. – Interdunal access to areas without established tracks may be required and in such instances, access tracks will be prepared by simply using a backhoe' blade-up' approach to clear the sparse vegetation where required. Additionally mud mats may also be used. – Modest vegetation disturbance may occur with the passage of vehicles in such areas, as such, a strict slow speed limits (<20km/hr) will be enforced to minimise erosion. – Topsoil will not be removed to create off-track access. – The area of disturbance, if off-track interdunal access is required, is estimated to be 3 meters wide and no more than 5 – 10km in length. – All drill collars will be placed on the flattest terrain possible, thereby avoiding the need for excavation and levelling for drill pads. – In cases where off-track ground disturbance cannot be avoided details including total area of disturbance (length and width) will be recorded. – Any cleared vegetation/debris will be pushed to one end of the drill site, so it can be easily salvaged and re-spread during the rehabilitation process.		

Indicate planned access routes on a locality plan and distinguish between existing and proposed new access tracks and drill lines (including fence lines).

Campsites, storage and equipment laydown areas

Using the tables below, provide a description of campsites and/or laydown areas required. Indicate the campsite and laydown area on a locality plan.

Campsite details
Indicate where staff and contractors will be accommodated during the exploration program.
There are two options available for staff during the 2025 program, these include: – Alligator Energy's portable mobile camp located adjacent to the disused Merty-Merty airstrip. – Moomba accommodation facility, in collaboration with Santos.

What is the maximum number of personnel requiring accommodation?	16	
Is a campsite required to be established? If no, no further information is required.	Yes ☒	No ☐
Provide a description and justification of the camp location (e.g. previously cleared areas etc.), and any other relevant information.		
– The Merty-Merty mobile camp is situated on sparsely vegetated low relief plains and accessed by well-established tracks. – The site location was identified via consultation with key stakeholders. – The location ensures camp facilities will not obstruct ongoing oil and gas operations. – The site was subject to a heritage clearance survey in April 2024.		
What will be the total area (ha) of the campsite(s)?	<1 ha	
What will be the total area (ha) of vegetation clearance for the campsite?	0 ha	
If vegetation clearance is required, describe the methods used to prepare the site.		
N/A.		
Will any excavations be required? If yes, describe the purpose of the excavation and the maximum volume (m^3) of material to be excavated.	Yes ☒	No ☐
– 1 m^3 excavation to house a macerator pump and tank (100 litre capacity) where portable accommodation used.		
Are the proposed ablution facilities endorsed/approved for use by the Department of Health or local council, where applicable? If no, indicate why.	Yes ☒	No ☐
N/A.		

Proposed infrastructure (includes caravans, tents, offices, hydrocarbon and water storage requirements etc)	**Quantity**	**Description/capacity**
Merty-Merty mobile camp:		
Mobile turnkey bathroom, kitchen and laundry module.	1	Especially designed for remote work including kitchen, showering, laundry and office facilities.
Mobile turnkey camp accommodation modules	2	2 x four-bedroom modules.
Water tanks for potable water	2	2 x 10, 000 litre tanks, with water to be transported from Moomba as required.
Tanks for black/grey water storage	2	2 x 10, 000 litre capacity, with waste removal via Moomba.
Genset	1	Transportable diesel generator.
10,000 litre double bunded diesel tank.	1	Fuel to be transported from Moomba as required.
Camper Trailer	1	For extra staff if required.
Canvass tents.	4	For extra staff if required.

Laydown area details		
Will laydown areas be required? If no, no further information is required.	Yes ☒	No ☐
Will the laydown area(s) be located at the same location as the campsite? If no, has the location(s) been discussed with the landowner?	Yes ☒	No ☐
What will be the maximum area (ha) required for the laydown area(s)?	<1 ha	
What will be the total area (ha) of vegetation clearance for the site?	0 ha	
If vegetation clearance is required, describe the methods used to prepare the site.		
No vegetation clearance is required for laydown areas.		
Will any excavations be required? If yes, describe the purpose of the excavation and volume (m^3) of material to be excavated.	Yes ☐	No ☒
N/A.		

Proposed infrastructure (includes hydrocarbon and water storage requirements)	**Quantity**	**Description/capacity**

2 – 4 spill pallets with underlying plastic bunding	2 – 4	Plastic bunding with capacity for 2 spill pallets
Driller's trailer or equivalent	2	Mobile tool shed utilised by drillers for tools and equipment
Pallet of drilling consumables	4	Flagging and pegging material, sample bags, cement, safety equipment, etc.
Pallet of mechanical equipment (drill rod grease, machine lubricants/oils, etc)	1-2	To be stored on a spill pallet in accordance with SA EPA Guideline for Bunding and Spill Management (EPA, 2016).
Water pump	1	Small firefighting pumps for emergencies or possible dust suppression.
Large spill kits	3	Kept and maintained at select locations including the drill rig
Small 8x5 trailer.	1	For moving samples and consumables around site

Provide a description and justification of the location (e.g. previously cleared areas), and any other relevant information if required.

The above infrastructure will be located at the campsite. Any surplus stock or materials will be stored at Moomba.

- The laydown area is situated on sparsely vegetated low relief plains and accessed by well-established tracks.
- The site location was identified via consultation with key stakeholders.
- The location ensures stored equipment will not obstruct ongoing oil and gas operations.
- The site was subject to a heritage clearance survey in April 2024.

Other exploration methods and/or ancillary operations

Are any other proposed exploration methods (e.g. seismic) and/or ancillary exploration operations required? If yes, describe the activity(s), site preparation, vegetation clearance, and safety and maintenance requirements.	Yes ☐	No ☒

N/A.

Water supply and management

Will camp and/or drilling water be required? If yes, describe how and where water will be sourced for drilling, track maintenance and camping purposes (e.g. groundwater, surface water, mains). Provide details on the volume of water required and how wastewater or runoff water will be managed.	Yes ☒	No ☐

Camp:

Potable water will be sourced from Santos' Moomba RO facility and stored in a 10,000 litre tank.

Drilling:

Water for drilling purposes will be sourced from either Santos' Moomba RO facility, a metered hydrant (standpipe), surface water (dams), groundwater wells (see below) and/or commercial agreements with the local pastoralists. Multiple sources of water are the favoured option when working in arid environments. The decision on the preferred water source will be made prior to drilling.

Wastewater:

Wastewater is captured on site in two 10,000 litre tanks and routinely sent for treatment/disposal at Moomba, or other EPA approved facility.

Will surface water and/or mineral drillholes be used as a water source/supply? If yes, indicate if a licence for water extraction/usage is required (refer to relevant Natural Resources Management water allocation plan available on the Department for Environment and Water (DEW) website. If a licence is required and has been obtained please attach a copy. Where a licence has not been obtained, include a statement confirming that a licence will be obtained before the extraction and/or usage of water.	Yes ☒	No ☐

Surface water:

- A licence is **not required**.

Groundwater Wells:

- A groundwater well construction permit (application #PA-724479) is currently being assessed by the Department for Environment and Water.
- An extraction licence is **not required**.
  - All groundwater taken from wells will be used **solely for drilling purposes** (see 'groundwater and drilling investigation activities' for further detail).
  - A licence for water is only required for investigation holes where water extraction is greater than 2 ML per program/per year and the well is greater than 5 km from a spring (**Map 14**). Water requirements for this program are expected to be approximately 0.4 ML and will therefore not require a license.

Reference:

https://cdn.environment.sa.gov.au/landscape/docs/saal/6087_wap_feb2021_final020321_002.pdf.

Groundwater and drilling investigation activities

Will any water bores be required and/or water investigation activities (e.g. pump testing, water monitoring sites, water storage, turkey nests/dams) be conducted? If yes, describe the water drilling and investigation activities, including site preparation, vegetation clearance, and safety and maintenance requirements.	Yes ☒	No ☐

Groundwater well drilling:

- Two groundwater wells may be required if other means of sourcing water for drilling are unavailable.
- **All groundwater taken from the two wells will be used solely for drilling purposes**. No monitoring, pump testing or water investigations will be conducted.
- The location of the wells will be proximal to drilling activities within the heritage cleared site 10A (**Map 1B, Section C**).
- The exact location of the wells will be determined in consultation with key stakeholders and previous drilling data collected during the 2024 program.
- The wells will be used for drilling water supply and not be subject to any further groundwater investigations (i.e. pumping tests) at this time.
- Wells will be drilled in accordance with AGE's 'drillhole construction and decommissioning' procedures detailed on page 22 – 23 of this PEPR and built in accordance with the Minimum Construction Requirements for Water Bores in Australia (4th edn.), National Uniform Drillers Licensing Committee 2020.
- Wells will be drilled using Rotary Mud
- Wells will be installed into the water table and will not intersect multiple aquifers. Screen depth will be chosen at the time of drilling with the main consideration being well yield.
- Wells will be constructed using class 12 PVC. Screen will be slotted PVC casing and may be gravel packed or natural packed depending on the formation sediments encountered.
- Wells will be cemented and capped to prevent groundwater contamination of aquifer.
- In the case of the landowner seeking retention of the wells, a request in writing must be provided to AGE and the appropriate permits/licences obtained.

Site preparation:

- Site preparation will be in accordance with AGE's 'drillhole construction and decommissioning' procedures detailed on page 21 – 22 of this PEPR.

Vegetation clearance:

- No vegetation clearance is required.

Safety and maintenance requirements:

- At the conclusion of drilling activities, the wells will be decommissioned in accordance with AGE's 'drillhole construction and decommissioning' procedures detailed on page 22 – 23 of this PEPR and the South Australian government M21: General specifications for construction and backfilling of mineral exploration drillholes.

Indicate if well permits have been obtained and whether or not a water extraction licence is required in accordance with the Landscape South Australia Act 2019. If yes, attach a copy of the permit(s)/licences. If no, provide a statement confirming that permits/licences will be obtained prior to commencement of water investigation activities.	Yes ☐	No ☒

- Despite the groundwater wells being located within the Far North Prescribed Wells Area, no water license is required as the volume to be extracted is below 2 ML per program per year
- Wells will not be closer than 5kms from a spring (**MAP 14**), as per Principle 47 Water Allocation Plan for the Far North Prescribed Wells Area.
- If permits and/or licences are required at a later stage of exploration an application for an EPEPR review will be submitted and permits **will be obtained** prior to commencement of water investigation activities.

Water affecting activities

Will any water affecting activities, other than drilling a water well, be undertaken (refer to s. 127 of the Landscape South Australia Act 2019)? If yes, attach a copy of the permit. If a permit has not been obtained, provide a statement confirming that a water affecting activity permit(s) will be obtained and provide a description of the site preparation, vegetation clearance, and safety and maintenance requirements.	Yes ☐	No ☒

N/A.

Management of hazardous materials

Will activities be conducted in areas of known uranium and thorium mineralisation? If yes, attach a Radiation Management Plan and confirmation of endorsement of the plan by the Environment Protection Authority South Australia (EPA).	Yes ☒	No ☐
A Radiation Management Plan and a letter of endorsement from the EPA SA are included in **Appendix 2** and **3** respectively.		
Will any other hazardous material be encountered when exploring in the area? If yes, list the types of hazardous materials and provide a management plan on how these materials will be managed.	Yes ☐	No ☒
N/A.		

Rehabilitation

Detail all the activities and strategies relating to the remediation of impacts associated with the proposed exploration operations.
Completion of rehabilitation must be achieved within 3 months after the expiry of this PEPR.

Existing Tracks:

- Proposed drilling and primary access to drill sites will be largely carried out on existing tracks. If rehabilitation is required, tracks will be restored to at least their prior condition on completion of the proposed work.

New Tracks:

- New tracks will be kept to a minimum.
- . Track placement will be carefully planned to minimise impacting vegetation, machinery will only be used for access and egress, hence disturbance will be minimal. Tracks are rolled in over established grasses and shrubs to retain the topsoil and vegetation.
- No earth works will be undertaken to obtain access to proposed drill sites.
- Approximately 3 months after completion of drilling and initial rehabilitation the site is re-visited, re-photographed and further remediation scheduled as required.

Drill sites – General Information:

- To facilitate minimum disturbance and best rehabilitation, drill collars will be moved to accommodate site conditions (e.g. trees, drainage lines etc.)
- Prior to the commencement of work a photo point is established ~25m away and a series of photographs taken to record surface and vegetation conditions.
- On completion of drilling and initial rehabilitation a wooden peg marked with the drill hole number is placed on the north side of the drill collar and a second series of photos taken as a record.
- Subsequent rehabilitation auditing will use the photo marker as a reference point.
- Approximately 3 months after completion of drilling and initial rehabilitation the site is re-visited, re-photographed and further remediation scheduled as required.
- On completion of drilling and subsequent downhole logging all machinery and equipment will be removed and excess samples disposed of.
- Post drilling site clearance is undertaken with a focus on reducing all visible aspect of ground disturbing activities.

Exploration camps and laydown areas (if used):

- Rehabilitation will include removal of all infrastructure followed by standard restoration works (e.g. respreading of topsoil, respreading of vegetation, ripping of compacted areas and excavation remediation in accordance with slump closure procedures).
- Buried infrastructure, such as pipelines or cables, removed.
- Any hydrocarbon contaminated material will be removed from site and disposed of at appropriately licensed facilities.

Daily progressive rehabilitation:

The daily rehabilitation procedure (while simultaneously conducting drilling) is listed below:

- On completion of drilling, sampling and logging the hole is grouted.
- Once the hole is decommissioned remaining sample material is placed in the sump.
- All rubbish is removed from the site and the sump left open to dry.
- The previous drillsite is then revisited and the site rehabilitated.
- AGE aims to have no more than 4 sites requiring drill pad rehabilitation at any one time.

State the estimated budget required to rehabilitate impacted sites.

Anticipated costs are based on a total of 2 drill holes in progress at any one time and no more the four sumps requiring rehab. The estimated cost for machine hire, drillhole grouting during decommissioning, the employment of a class 2 driller and two field technicians is estimated at $42,000.

Vegetation Clearance

Will any area of cleared native vegetation be unrehabilitated after the authorised period?	Yes ☐	No ☒
If yes, provide a description of the vegetation present in the application area, the extent of the proposed vegetation clearance and the likelihood of the presence of threatened flora. Provide this information on a map.		
N/A.		
State the estimated quantum of significant environmental benefit (SEB) to be gained in exchange for the proposed native vegetation clearance and describe how the SEB will be provided.		
Every attempt will be made to avoid impacts on native vegetation, including but not limited to possible relocation of the exploration activity, redesigning how it will be undertaken, assessing low impact ingress and egress to the site etc.		

SECTION E – LEASE CONDITIONS

Retention leases

Where the retention lease includes specific conditions that are not environmental outcomes, demonstrate where these have been addressed in the PEPR (if relevant) or demonstrate how otherwise they have or will be complied with.

N/A.

SECTION F – MANAGEMENT OF ENVIRONMENTAL IMPACTS

Use the table below (instructions provided) to identify all of the potential environmental, social and economic impact events that are likely to occur as a result of the proposed exploration operations, how each of the identified impacts will be managed, and the residual risk, i.e. the level of risk remaining after implementing control and management strategies. Identified potential impact events should be developed based on the aspects of the environment that may be impacted on and the proposed operational details. Potnetial impact events must have corresponding outcomes and measurement criteria.

Where the terms and conditions of an RL include environmental outcomes, list them (where different) in the table below and complete all sections (ie receptor, potential impacts, control strategies, risk assessment and measurement criteria).

Environmental management – potential impacts/events, outcomes, measurable criteria and monitoring plan

			Likelihood of consequence (LH)				
			1	2	3	4	5
			Rare	Unlikely	Possible	Likely	Almost certain
Severity of consequence (CQ)	A	Insignificant	Low	Low	Low	Low	Low
	B	Minor	Low	Low	Moderate	Moderate	Moderate
	C	Moderate	Moderate	Moderate	High	High	High
	D	Major	High	High	Extreme	Extreme	Extreme
	E	Catastrophic	High	Extreme	Extreme	Extreme	Extreme

How to fill out the table

1. Based on the description of the environment and exploration operations, indicate which potential impacts are applicable to the proposed program. Note that some potential impacts are applicable to all programs.
2. For each applicable potential impact (and corresponding receptor), describe control strategies that will reduce the risk of the potential impact to an acceptable level, and achieve the corresponding environmental outcomes.
3. Conduct an impact assessment to determine if the control strategies address the potential impact (i.e. reduce the risk to an acceptable level). Indicate where there is uncertainty pertaining to the likely effectiveness of the control strategies. Where the risk is not considered low, provide justification that the risk is acceptable, or consider additional strategies to reduce the risk to an acceptable level.
4. For each applicable potential impact, the corresponding outcome and outcome measurement criteria are required.
5 Based on the description of the environment and proposed exploration activities, determine if any other potential impacts are applicable. For each new potential impact, describe proposed control and rehabilitation strategies, conduct an impact assessment, and develop corresponding outcomes and outcome measurement criteria.

Use the above matrix to conduct an impact assessment for each potential impact.

Impact assessment							Outcomes	Outcome measurement criteria (inc. monitoring plan)
Receptor Lists are not exhaustive.	**Potential impacts** Lists are not exhaustive.	**Is the potential impact applicable (Yes/No)** Some potential impacts are applicable to all programs.	**Control strategies** Indicate where there is uncertainty pertaining to the likely effectiveness of the control strategies. Where the risk is not considered low, provide justification that the risk is acceptable, or consider additional strategies to reduce the risk to an acceptable level. – refer to Minerals Regulatory Guidelines MG22 for more information.	**Risk assessment** LH = likelihood of consequence CQ = severity of consequence				
				LH	**CQ**	**Risk**		
Stakeholders: • freehold land owners • perpetual lease holders • pastoral lease holders • Aboriginal land (Anangu Pitjantjatjara Yankunytjatjara and Maralinga Tjarutja lands) • Department of Defence • state government departments. • local government (councils) • federal government • native title parties.	Interference to: • existing or permissible land use (includes loss of income, noise, dust, light and other emissions). • buildings, structures, existing tracks or other infrastructure. • aesthetic values of an area. Noncompliance with legislative requirements.	**Yes** (Applicable to all programs.)	• Ongoing discussions with landowner over proposed work area to continue to ensure all parties remain well informed of all works and a good working relationship maintained. Conduct in person/phone meetings and updates as appropriate and organised or requested by landholder to ensure they are well informed in the development and execution of the exploration program. • Contact details provided to landowners for a primary liaison officer/senior onsite officer. All landholders have the contact of AGE's COO to call for any other ad-hoc issues. • Regular toolbox meetings with all AGE staff and contractors communicating key ePEPR requirements and any potential/identified site issues. • Community Engagement Plan for exploration in place outlining complaints and grievance resolution procedures and timeframes. • Use existing tracks where possible, imposing appropriate speed limits to reduce dust. • On tracks that solely AGE are utilising for drill site access a water truck may also be employed should dust conditions become problematic or pose a health or safety hazard on less. • Rehabilitate all new tracks and drill sites at completion of program and appropriate maintenance to existing utilised tracks. • Coordinate vehicle use to minimise track disturbance as much as possible.	2	B	Low	**Stakeholders are fully informed and satisfied with the proposed methods used to conduct exploration activities on their land, and all prescribed forms are served and agreements obtained in accordance with the Mining Act.**	Provide the information requested within the 'Complaints' section of the annual exploration compliance report demonstrating that all reasonable complaints from stakeholders are resolved to the satisfaction of both parties prior to and ongoing during the course of exploration program, without the involvement of DEM. Provide the information requested within the 'Landowner details and liaison' section of the annual exploration compliance report demonstrating that prescribed forms were served and agreements obtained in accordance with the Mining Act prior to the commencement of exploration activities.
Stakeholder: DEW	Interference to: • existing or permissible land use. • buildings, structures, existing tracks or other infrastructure. • aesthetic values of an area.	**No** (Applicable to programs located adjacent to or within parks and reserves.)	N/A.				**For activities located within or adjacent to regional reserves, national, conservation and marine parks only:**	Provide confirmation that: • Park access notification forms were submitted to DEW and DEM at least 10 days prior to entry into regional reserves, national, conservation and marine parks, or

Impact assessment							Outcomes	Outcome measurement criteria (inc. monitoring plan)
Receptor Lists are not exhaustive.	**Potential impacts** Lists are not exhaustive.	**Is the potential impact applicable (Yes/No)** Some potential impacts are applicable to all programs.	**Control strategies** Indicate where there is uncertainty pertaining to the likely effectiveness of the control strategies. Where the risk is not considered low, provide justification that the risk is acceptable, or consider additional strategies to reduce the risk to an acceptable level. – refer to Minerals Regulatory Guidelines MG22 for more information.	**Risk assessment** LH = likelihood of consequence CQ = severity of consequence **LH**	**CQ**	**Risk**		
	Noncompliance with legislative requirements.						• **no unauthorised interference with park management activities.**	• Program notifications for PEPRs approved for an ongoing period of time, were submitted to DEW and the DEM at least 21 days prior to entry into regional reserves, national, conservation and marine parks.
Flora and fauna and their habitats; includes Commonwealth and state scheduled species.	Loss/modification of native vegetation and associated habitats through the clearance of vegetation.	**Yes** (Applicable to exploration programs located within or impacting on native vegetation.)	• Maintain up to date records of SARIG and relevant SA and Commonwealth Govt. data sources to identify records of significant flora & fauna within project area. • Alligator's Energy's Environmental Manager to identify significant flora & fauna and best practices of identification for field staff during inductions. Maintain up to date field induction. • Regular toolbox meetings with all AGE staff and contractors communicating key ePEPR requirements and any potential/identified site issues. • Always use existing tracks where possible. • Planned drill sites will be inspected prior to clearing during reconnaissance. Hole locations to be adjusted/moved accordingly to minimise disturbance where practicable. Natural clearings to be utilised where possible. • To minimise adverse environmental impacts when constructing new tracks, a 'blade up' method will be employed to help retain vegetation, soil and root stock. This approach will reduce potential erosion, promote vegetation rebound and encourage faster rehabilitation once works are completed. • Hot works such as grinding, welding, oxy cutting are to be caried out in the townships of Innamincka or Moomba. • Extinguishers with all machinery and vehicles at all times.	2	B	Low	**No permanent loss/modification of native flora and fauna populations and their habitats through:** • **clearance** • **fire** • **other** **unless prior approval under the relevant legislation is obtained.**	Maintain before, during and after photographic evidence of all exploration sites (e.g. drillsites, new track exit/entry points off existing tracks, costeans, campsites) demonstrating that: • The area and method of disturbance is consistent with that described in the PEPR. • No uncontrolled fires* occurred as a result of exploration activities. Representative photos to be included within the annual exploration compliance report.
All flora and fauna, especially listed species.	Loss/modification of the environment (biological, social and economic) through the introduction of weeds and pathogens.	**Yes** (Applicable to all programs.)	• Maintain up to date records of SARIG and relevant SA and Commonwealth Govt. data sources to identify records of significant Flora & Fauna within Project area. • Utilise environmentalist for identification of significant flora & fauna including weeds and pest species. Induct field staff on best practices and provide training on weed species identification. • All vehicles and machinery to be thoroughly cleaned and inspected before being allowed on site. Vehicles requiring access to pastoral stations to be cleaned and inspected prior to entering. • Risk of weed introduction to be discussed with all field staff and environmental consultant. • Records of any weed species to be taken during initial reconnaissance and appropriate eradication/avoidance of existing weeds to be taken following environmental consultant advice and discussion with landholders. • Rehabilitated sites to be revisited periodically to monitor for any introduced weed species or sustained increase in weed species. Weeds to be controlled where appropriate.	2	B	Low	**No introduction of new species of weeds and plant pathogens, nor increase in abundance of existing weeds species.**	Provide a statement within the 'Compliance with approved programs' section of the annual exploration compliance report, confirming that: • Vehicle logs were kept during the exploration program, demonstrating that all vehicles are clean and free of plant and mud material prior to entering properties† within the tenement areas, unless otherwise agreed to with the relevant landowners. • Photographic evidence before and during exploration operations and after rehabilitation of disturbed sites was captured, demonstrating that no new weeds and plant pathogens were introduced, nor an increase in abundance of existing weeds recorded.

Impact assessment							Outcomes	Outcome measurement criteria (inc. monitoring plan)
Receptor Lists are not exhaustive.	**Potential impacts** Lists are not exhaustive.	**Is the potential impact applicable (Yes/No)** Some potential impacts are applicable to all programs.	**Control strategies** Indicate where there is uncertainty pertaining to the likely effectiveness of the control strategies. Where the risk is not considered low, provide justification that the risk is acceptable, or consider additional strategies to reduce the risk to an acceptable level. – refer to Minerals Regulatory Guidelines MG22 for more information.	**Risk assessment** LH = likelihood of consequence CQ = severity of consequence				
				LH	**CQ**	**Risk**		
All fauna	Entrapment of fauna through open drillholes and excavations.	**Yes** (Applicable to exploration programs that involve drilling and/or require excavations.)	• Open drill holes are to be covered/capped to prevent fauna entrapment. • Progressive rehabilitation of drill sites is to be conducted during the program ensuring holes and sumps are rehabilitated to regulatory standards. Typically, holes will be backfilled immediately after completion and sump backfilled once dry. • All sumps are to have egresses to ensure safe exit for fauna. Plastic barrier fencing will be erected around open sumps. Sumps are to be backfilled once no longer required. • All rehabilitation to be completed within 3 months of expiry of the ePEPR approval (for ePEPRs approved for a period of 12 months), or 3 months after the expiry of a program notification (for ePEPRs approved for an ongoing period), unless otherwise authorised.	1	A	Low	**No fauna traps created as a result of exploration activities.**	Maintain before, during and after photographic evidence of all drillholes and/or excavations demonstrating that: • All drillholes were permanently or temporarily capped/plugged immediately upon completion. • No fauna and livestock became trapped in drillholes and/or excavations throughout the duration of the program. • All rehabilitation was completed within 3 months of expiry of the PEPR approval (for PEPRs approved for a period of 12 months), or 3 months after the expiry of a program notification (for PEPRs approved for an ongoing period), unless otherwise authorised. Representative photos are to be included within the annual exploration compliance report. Provide the information requested within the 'Rehabilitation' section of the annual exploration compliance report.
Aboriginal heritage sites	Disturbance to Aboriginal heritage.	**Yes** (Applicable to all programs.)	• Proposed drilling sites to be subject of a heritage clearance survey(s) prior to commencement of the drill program (clearance will be valid for a period of five years). • No drilling in identified sites of significance. • Identification of any unknown potential sites will result in consultation with appropriate specialists and heritage groups. • If previously unidentified heritage items, sites or remains are identified, work will cease in that area until the appropriate native title representative body is notified (with expectation they will report to SA state government) and advice is provided. • Vehicle movements will be restricted to existing tracks where possible. • All staff and contractors will be informed of the possibility for the presence of heritage sites despite existing surveys and the importance of not disturbing such sites.	1	B	Low	**No disturbance to Aboriginal artefacts or sites of significance unless prior approval under the relevant legislation is obtained.**	Maintain a database and provide a statement within the 'Compliance with approved programs' section of the annual exploration compliance report demonstrating that: • Heritage sites were not impacted during the conduct of the exploration program, unless prior approval was obtained under the appropriate legislation. • Work ceased on discovery of a significant site and recommenced only after authorisation. • Aboriginal heritage sites identified during the exploration program were appropriately recorded and reported to authorities, if not previously known.
European heritage sites and sites of scientific and environmental significance	Disturbance to European heritage sites and sites of scientific and environmental significance (e.g. geological monuments, fossil reserves).	**Yes** (Applicable to exploration programs located close to or within European heritage sites and sites of scientific and environmental significance.)	N/A.				**No disturbance to European heritage sites and to sites of scientific and environmental significance unless prior approval under the relevant legislation is obtained.**	Demonstrate no impact to heritage sites and sites of scientific and environmental significance by: • Maintaining evidence, including detailed maps showing sites compared to the location of exploration activities, and photographic evidence of sites before and after the conduct of the exploration program. • Providing a statement within the annual exploration compliance report confirming sites were not impacted during the conduct of the exploration program.

Impact assessment							Outcomes	Outcome measurement criteria (inc. monitoring plan)
Receptor Lists are not exhaustive.	**Potential impacts** Lists are not exhaustive.	**Is the potential impact applicable (Yes/No)** Some potential impacts are applicable to all programs.	**Control strategies** Indicate where there is uncertainty pertaining to the likely effectiveness of the control strategies. Where the risk is not considered low, provide justification that the risk is acceptable, or consider additional strategies to reduce the risk to an acceptable level. – refer to Minerals Regulatory Guidelines MG22 for more information.	**Risk assessment** LH = likelihood of consequence CQ = severity of consequence **LH**	**CQ**	**Risk**		
Soil/vegetation/fauna	Soil/vegetation contamination (e.g. hydrocarbons, rubbish, drill samples/cuttings, ablutions, other sources).	**Yes** (Applicable to all programs.)	• Any hydrocarbon storage is to be bunded in accordance with EPA guidelines. If required, fuel transport between Moomba/Innamincka and the drill site will utilise a self-bunded fuel trailer. • Large spill kits are to be kept and maintained at select locations including the drill rig. • No rubbish to be left on site on completion of the program. • All rubbish to be securely placed in bins and removed from site frequently to either an EPA approved waste disposal site or in suitable rubbish tip located on one of the nearby pastoral stations. • Landowner permission has been sort, and granted, to dispose of waste at Merty-Merty pastoral station rubbish tip if required. • All personnel on site are to be inducted on maintaining a clean site and litter awareness. Personnel are also to be inducted on the importance of preventing hydrocarbon spills and contamination. • All drill cuttings (including those that are mineralised) will be buried at least 1 m below surface in drill sumps along with any disturbed calcrete from sump excavation. • Photos of all drill sites prior to disturbance, post drilling will be recorded to show restoration of the site and clearance of all equipment and rubbish following exploration. Photos will also be recorded of proposed laydown areas prior and after use, to demonstrate clean practices and removal of all waste. • Any hydrocarbon spills >5L to be reported using AGE's DoneSafe safety system.	3	B	Mod	**No contamination of soil and vegetation as a result of exploration activities.**	Demonstrate that all domestic or industrial waste (includes general rubbish and hydrocarbons) is disposed of in accordance with the *Environment Protection Act 1993* within 3 months of the expiry of the PEPR approval (for PEPRs approved for a period of 12 months), or 3 months after the expiry of a program notification (for PEPRs approved for an ongoing period), and that all fuel and chemicals are stored in accordance with EPA requirements, by providing: • The name, location and contact details of the authorised waste disposal facility. • A statement within the 'Compliance with approved programs' section of the annual exploration compliance report confirming domestic and industrial waste was removed from all exploration sites and disposed of at an authorised waste disposal facility. • Photographic evidence within the annual exploration compliance report demonstrating that all fuel and chemical storage facilities were managed in accordance with EPA requirements. Maintain photographs of all exploration sites and provide representative photos within the annual exploration compliance report demonstrating that drill cuttings are: • removed from site and disposed of at a licensed facility • buried under a minimum of 30 cm of soil, or in accordance with EPA guideline, *Radiation protection guidelines on mining in South Australia: mineral exploration*, available on the EPA website, or • backfilled down the drillhole, within 3 months of the expiry of the PEPR approval (for PEPRs approved for a period of 12 months), or 3 months after the expiry of a program notification (for PEPRs approved for an ongoing period), unless otherwise authorised. Provide the information requested within the 'Rehabilitation' section of the annual exploration compliance report.
Soil	Disturbance to the soil profile and topography, and accelerated soil erosion caused by exploration activities (e.g. construction of sumps, new tracks and drill pads; ground compaction at laydown areas and camps).	**Yes** (Applicable to all programs.)	• Existing tracks will be used where possible. • Erosion on new tracks and pads will be minimised through the restricted clearing of existing vegetation – leaving all low-lying vegetation and rootstocks in place through "tracking in" or rolling where practical. • Avoidance of tight corners will also be employed to minimise disturbance. All vehicles will be required to remain on existing tracks and pads as much as possible. • The utilisation of existing clearings has been employed for camps, laydown areas and new pads where possible. • Rehabilitation of new tracks and pads will be conducted to best practices, including replacing any displaced topsoil, replacing any cleared vegetation debris and removing any windrows where appropriate.	4	A	Low	**Where soil disturbance occurs as a result of exploration activities, ensure that:** • **topsoil quality and quantity is maintained** • **the soil profile and topography is reinstated to original conditions** • **there is no accelerated soil erosion.**	Maintain before, during and after photographic evidence of all excavations, drillsites, camps, laydown areas and new tracks demonstrating that: • The soil profile and topography is reinstated to original conditions and is consistent with natural surroundings within 3 months of the expiry of the PEPR approval (for PEPRs approved for a period of 12 months), or 3 months after the expiry of a program notification (for PEPRs approved for an ongoing period), unless otherwise authorised. • Where required, sufficient topsoil is removed (depending on soil profile), stored separately from subsoil and reinstated (in the correct order) within 3 months of the expiry of the PEPR approval (for PEPRs approved for a period of 12 months), or 3 months after the expiry of a program notification (for PEPRs approved for an ongoing period), unless otherwise authorised. • There are no signs of accelerated soil erosion during and post rehabilitation of disturbed sites. Representative photos to be included within the annual exploration compliance report. Provide the information requested within the 'Rehabilitation' section of the annual exploration compliance report.
Surface water	Alteration to surface water – interference to surface drainage.	**No** (Applicable to exploration programs that are likely to impact on surface drainage channels.)	• Exploration activities will not impact, interfere or damage surface drainage channels. • No excavations are required for any potential surface water use. • Surface water, if required, will only be sourced for established water bodies. • Relevant stakeholders/landholders will be consulted prior to sourcing any water from dams and bores.	1	A	Low	**No permanent modification to hydrological features caused by exploration activities without obtaining a water affecting permit from the relevant Landscape Board (under Landscapes Act SA 2019).**	Provide before, during and after photographic evidence within the annual exploration compliance report demonstrating that original drainage contours (watercourses and lakes) are consistent with the natural relief post rehabilitation within 3 months of the expiry of the PEPR approval (for PEPRs approved for a period of 12 months), or 3 months after the expiry of a program notification (for PEPRs approved for an ongoing period). Alternatively, provide copies of water affecting permits within the annual exploration compliance report.

Impact assessment							Outcomes	Outcome measurement criteria (inc. monitoring plan)
Receptor Lists are not exhaustive.	**Potential impacts** Lists are not exhaustive.	**Is the potential impact applicable (Yes/No)** Some potential impacts are applicable to all programs.	**Control strategies** Indicate where there is uncertainty pertaining to the likely effectiveness of the control strategies. Where the risk is not considered low, provide justification that the risk is acceptable, or consider additional strategies to reduce the risk to an acceptable level. – refer to Minerals Regulatory Guidelines MG22 for more information.	**Risk assessment** LH = likelihood of consequence CQ = severity of consequence				
				LH	**CQ**	**Risk**		
Groundwater/aquifer	Groundwater contamination: • contamination of aquifers through entry of pollutants from the surface • interconnection between aquifers • degradation of natural hydrostatic conditions (maintain pre-drilling pressures).	**Yes** (Applicable to all exploration programs that may intersect groundwater.)	• The potential for intersecting confined conditions is possible and as such, Alligator Energy will employ an experienced licenced Class 2 driller/drilling supervisor and have in place contingencies for encountering multi-aquifer and/or confined conditions. • Alligator Energy will ensure that appropriate materials for the abandonment and rehabilitation of drillholes are available on-site. • All drillholes (aircore and rotary mud) will be cemented from bottom of hole to surface to avoid any uncertainty in identifying whether aquifers encountered are confined or unconfined. Backfill above the cement plug will be mounded and compacted over the hole to allow for subsidence and limit the pooling of surface water. • Only appropriately licenced and experienced Class 2 driller/drilling supervisor will be permitted to undertake drilling activities on site. • Drilling contractors will be required to use suitably approved products such as bio-degradable rod grease. Disposal of any unwanted chemicals/hydrocarbons downhole is not permitted.	2	C	Mod	**Drillholes restored to controlling geological conditions that existed before the hole was drilled or, where it is intended to re-enter the hole, the hole must be completed with casing of adequate strength and the casing cemented so that all aquifers are isolated to prevent the movement of any fluids behind the casing.**	Maintain evidence demonstrating that drillholes are decommissioned in accordance with or better than the Earth Resources Information Sheet M21, *Mineral exploration drillholes – general specifications for construction and backfilling*, and/or specific conditions from DEW (Groundwater) within 3 months of the expiry of the PEPR approval (for PEPRs approved for a period of 12 months), or 3 months after the expiry of a program notification (for PEPRs approved for an ongoing period), unless otherwise authorised. Note all drillholes will be cemented from bottom of hole to the surface. Provide the information requested within the 'Groundwater' section of the annual exploration compliance report.
Soil/vegetation/fauna	Discharge of groundwater into the surrounding environment.	**Yes** (Applicable to all exploration programs that may intersect groundwater or where activities require the discharge of groundwater into the surrounding environment.)	• During drilling any intersected waters are to be contained within an in-ground sump at each drill site. There will be no discharge of groundwater into the surrounding environment. • On completion of drilling, sumps will be allowed to dry out before being backfilled. • Should excess water be intersected drilling operations are to be halted to ensure no groundwater runs beyond the drill pad. **Note: Aquifers likely to be intersected are not artesian.**	2	B	Low	**No discharge of groundwater outside of the exploration site (e.g. drillsite) into the surrounding environment and no discharge of water into a watercourse, unless prior approval under the relevant legislation is obtained.**	Maintain photographic evidence of all drillsites demonstrating that groundwater was not discharged into the surrounding environment, unless water affecting activity permits were obtained allowing the discharge of groundwater into watercourses and/or lakes. Representative photos and water affecting activity permits (where applicable) to be included within the annual exploration compliance report.
Groundwater users	Interference to existing water users when extracting water from existing dams, water bores or mineral drillholes.	**Yes** (Applicable to all exploration programs that may require the use of water from existing dams, water bores or mineral drillholes.)	• Relevant stakeholders/landholders will be consulted prior to sourcing any water from dams and bores. • Sources will only to be used with stakeholder/landholder authority. • Arrangements for sourcing water from approved external sources, such as the purchase of water from council standpipes and water supply companies, have also been arranged for 2025.	1	A	Low	**No public nuisance impacts resulting from the extraction of water for exploration purposes, unless prior approval under the relevant legislation is obtained.**	Provide the information requested within the 'Complaints' section of the annual exploration compliance report demonstrating that all reasonable complaints from stakeholders were resolved to the satisfaction of both parties, prior to and ongoing during the course of the exploration program without the involvement of DEM. Where permits are required for the extraction and/or usage of groundwater, provide copies of the licence or permit within the annual exploration compliance report.
Soil/vegetation/fauna	Degradation of rehabilitated access tracks caused by third party access (includes previously closed and rehabilitated access tracks).	**Yes** (Applicable to exploration programs that create new access tracks.)	• A record of all additional new and existing tracks will be established during the drilling program with before and after photographs demonstration rehabilitation and closure of new tracks. • Existing tracks will be used where possible with strict speed limits imposed to minimise dust and erosion during the program. • On completion of the proposed work program all appropriate tracks will be closed and rehabilitated to best practices, removing windrows, infilling, whoa boys and reseeding where necessary.	2	B	Low	**Rehabilitated access tracks remain permanently closed, unless prior approval under the relevant legislation is obtained.**	Maintain before and after photographic evidence demonstrating that all tracks are closed and rehabilitated within 3 months of the expiry of the PEPR approval (for PEPRs approved for a period of 12 months), or 3 months after the expiry of a program notification (for PEPRs approved for an ongoing period), unless otherwise authorised. Representative photos are to be included within the annual exploration compliance report. Provide the information requested within the 'Rehabilitation' section of the annual exploration compliance report.

Impact assessment							Outcomes	Outcome measurement criteria (inc. monitoring plan)
Receptor Lists are not exhaustive.	**Potential impacts** Lists are not exhaustive.	**Is the potential impact applicable (Yes/No)** Some potential impacts are applicable to all programs.	**Control strategies** Indicate where there is uncertainty pertaining to the likely effectiveness of the control strategies. Where the risk is not considered low, provide justification that the risk is acceptable, or consider additional strategies to reduce the risk to an acceptable level. – refer to Minerals Regulatory Guidelines MG22 for more information.	**Risk assessment** LH = likelihood of consequence CQ = severity of consequence				
				LH	**CQ**	**Risk**		
Community/landowners	Damage to infrastructure and loss of income through fire.	**Yes** (Applicable to all programs.)	• All worksites will have appropriate levels of vegetation clearance from active and hot machinery to mitigate the risk of fire. • Drill rigs are required to have an emergency stop and a minimum of 2 fire extinguishers. • Additional fire extinguishers will be supplied at site by AGE. • No “hot works” are to be conducted proximal to vegetation. • Active drill sites will also have a water source for drilling purposes which may be used in emergencies additional to fire extinguishers. • Existing tracks in the proposed work area are anticipated to form effective fire breaks near all works. Combined with livestock grazing pressures, flammable vegetation levels are deemed very low across the work area. • The project is located ~20km from Moomba and the local fire services are to be called if merited.	2	A	Low	**No loss of infrastructure or income through fire as a result of exploration activities.**	Provide a statement within the ‘Compliance with approved programs’ section of the annual exploration compliance report confirming that no uncontrolled fires* occurred. Alternatively, provide a report on the independent investigation of all uncontrolled fires* demonstrating that the licensee could not have reasonably prevented the fire through the implementation of precautionary measures.
General public	Injury or death to members of the public as a result of exploration activities.	**Yes** (Applicable to all programs.)	• The proposed work area is located far from residences and neighbours within expansive grazing lands. The closest residences are approximately ~15km from proposed works with additional residences located 70km or more from the proposed work area. It’s expected any public interaction during exploration works will be negligible. • All operational staff and contract personnel are required to have full site inductions before being permitted on site. • Visitors to site will be required to undergo a visitor’s induction for site access and be accompanied by AGE staff or contractors at all times. • All personnel visiting and supporting works with drilling will be required to undergo a specific drill site and rig induction, performed by drilling contractors in addition to AGE induction. • Only necessary and appropriately inducted staff and visitors will be permitted within proximity of active drilling activities during the proposed exploration work program. • Throughflow traffic is anticipated to be minimal. Appropriate barriers such as bunting and cones will be established as necessary to restrict site access during active drilling operations. • Warning signs highlighting drilling hazards and operations will be erected around the active drill site.	1	C	Mod	**No accidents involving the public that could have been reasonably prevented by the licensee.**	Provide a statement within the ‘Compliance with approved programs’ section of the annual exploration compliance report confirming no accidents occurred involving the public during and after the exploration program. If an accident involving the public did occur, provide a copy of the independent investigation report within the annual exploration compliance report demonstrating that the licensee could not have reasonably prevented the accident through the implementation of precautionary measures.
General public, employees, contractors and the environment	Contamination of the environment when exploring for known uranium and thorium deposits. Public and employee/contractor exposure to low level radiation.	**Yes** (Applicable to exploration programs located within known uranium or thorium deposits.)	• An accredited Radiation Safety Officer will be appointed to the program for radiation management. • Recordings of gamma levels at drill sites will be taken before and after drilling to ensure no surface contamination occurs and levels remain consistent. • Mineralised drilling returns will be contained within inground sumps and cuttings buried to at least 1 m within drill site sumps in accordance with the radiation protection guidelines on mining in South Australia. • All staff permitted on site will be required to have full site and radiation safety inductions. A record of all inducted staff will be kept, and daily reports taken to record daily personnel on site. • All field personnel involved with drilling will be issued with radiation monitor badges during drilling operation. ARPANSA TLD badges will be issued to individuals and worn at all times while on drill site and handling samples. • Personal dose levels are all anticipated to be within safe limits throughout the program with any radiation exposure predicted to be of low levels. To further reduce risk to drill site staff, contractors and visitors are required to wear standard PPE.	2	C	Mod	**No increase in background radiation levels, and employee/contractor exposure levels during the exploration program are within safe limits.**	Maintain a database and provide a statement within the ‘Compliance with approved programs’ section of the annual exploration compliance report demonstrating that: • Radiation levels post exploration and rehabilitation are consistent with pre-existing background levels. • Employee and contractors exposure levels were within safe limits during the exploration program.

Impact assessment							Outcomes	Outcome measurement criteria (inc. monitoring plan)
Receptor Lists are not exhaustive.	**Potential impacts** Lists are not exhaustive.	**Is the potential impact applicable (Yes/No)** Some potential impacts are applicable to all programs.	**Control strategies** Indicate where there is uncertainty pertaining to the likely effectiveness of the control strategies. Where the risk is not considered low, provide justification that the risk is acceptable, or consider additional strategies to reduce the risk to an acceptable level. – refer to Minerals Regulatory Guidelines MG22 for more information.	**Risk assessment** LH = likelihood of consequence CQ = severity of consequence **LH**	**CQ**	**Risk**		
			• All drill cuttings will have radiation levels recorded utilising a calibrated scintillometer, with whole metre interval recordings taken and recorded within an active drilling database. • Routine drill site and rig inspections will be conducted by Alligator Energy personnel to monitor and record radiation levels in conjunction with environmental and safety compliance monitoring. • Washdown of site vehicles is to be conducted frequently. • On completion of program drill rigs and equipment leaving site will require washdown before being inspected by Alligator Energy personnel for weed and radiation clearance prior to leaving site. • Radiation monitoring of all vehicles leaving site will be conducted and recorded in AGE's DoneSafe safety system.					
Other (if applicable)								

* Uncontrolled fires = fires that escape outside of the work area (e.g. drillsite).

† Properties = freehold (cropping and grazing land); perpetual/pastoral lease land; council land; regional reserves; national, conservation and marine parks; Aboriginal land; Commonwealth land etc.

SECTION G - OPERATOR CAPABILITY

Provide information demonstrating that the tenement holder and operator (where applicable) has the capability to conduct the program in a manner that consistently ensures ongoing achievement of the environmental outcomes. This may be demonstrated within the PEPR by providing an overview of the following:

- Manuals or standard operating procedures that outline the safe and environmentally sound operation of all critical operations associated with the exploration program that ensure compliance with the PEPR.
- Systems in place to monitor, audit and assess compliance against the criteria approved in the PEPR.
- Systems in place to identify and report any noncompliance with regulatory requirements or relevant environmental outcomes (e.g. measures in place to report incidents in accordance with regulation 79(3)).
- Practices and procedures in place to provide appropriate communication of regulatory requirements to employees and contractors (e.g. induction programs).
- Practices and procedures in place to respond to, and communicate with landowners and external parties on the proposed program and compliance matters (e.g. complaints)

Alligator Energy Ltd (AGE) is the parent company of Big Lake Pty Ltd and acting as operator of EL6367. AGE has been an established junior explorer for over 11 years, historically primarily operating in Arnhem land (NT) with a strong focus on safe working practices and high standards for rehabilitation.

Company Policies:

- Community Relations Policy.
- Environmental Policy.
- Health & Safety Policy.
- Risk Management Policy.

Manuals and operating procedures:

- Induction manual – Containing all staff induction information ranging from radiation safety, vehicle operation protocols, safety manual to tool-box meeting forms outlined below:
- Safety manual.
- Radiation safety manual.
- Ground disturbance protocol.
- Drill pad protocol.
- Drilling contractor guidelines.
- Waste management guidelines.
- Medical evacuation procedure.
- Search and rescue procedure.
- Vehicle operation protocol.
- Camp and general site rules.
- Hydrocarbon/chemical spill management.

Monitoring forms and audits:

- Radiation safety/weed clearance form.
- Environmental – Incident report form.
- Safety – Incident report form.
- Drilling operations checklist.
- Toolbox meeting form.
- Drill site analysis forms.
- Internal compliance audits – An internal review template to survey the safe and compliant work practices in operation, including environmental and radiation compliance reviews.
- Radiation monitoring forms – Drill sites, laydown and sample storage.
- Contact List.
- Radiation monitoring schedule.

Registers:

- Rehab status register.
- Site induction register.

Daily reports:

- Include site staff, operations and incidents (during active on groundwork under an approved PEPR).

SECTION H –ADDITIONAL INFORMATION

List any other supporting information and/or documents submitted with the application, including land access approvals/permits required to conduct the proposed exploration program.

Appendix 1 – Protected Matters Report
Appendix 2 – Big Lake Radiation Management Plan
Appendix 3 – Endorsement of BLU Exploration Radiation Management Plan

SECTION I – PHOTOS

Include photographs in this section:

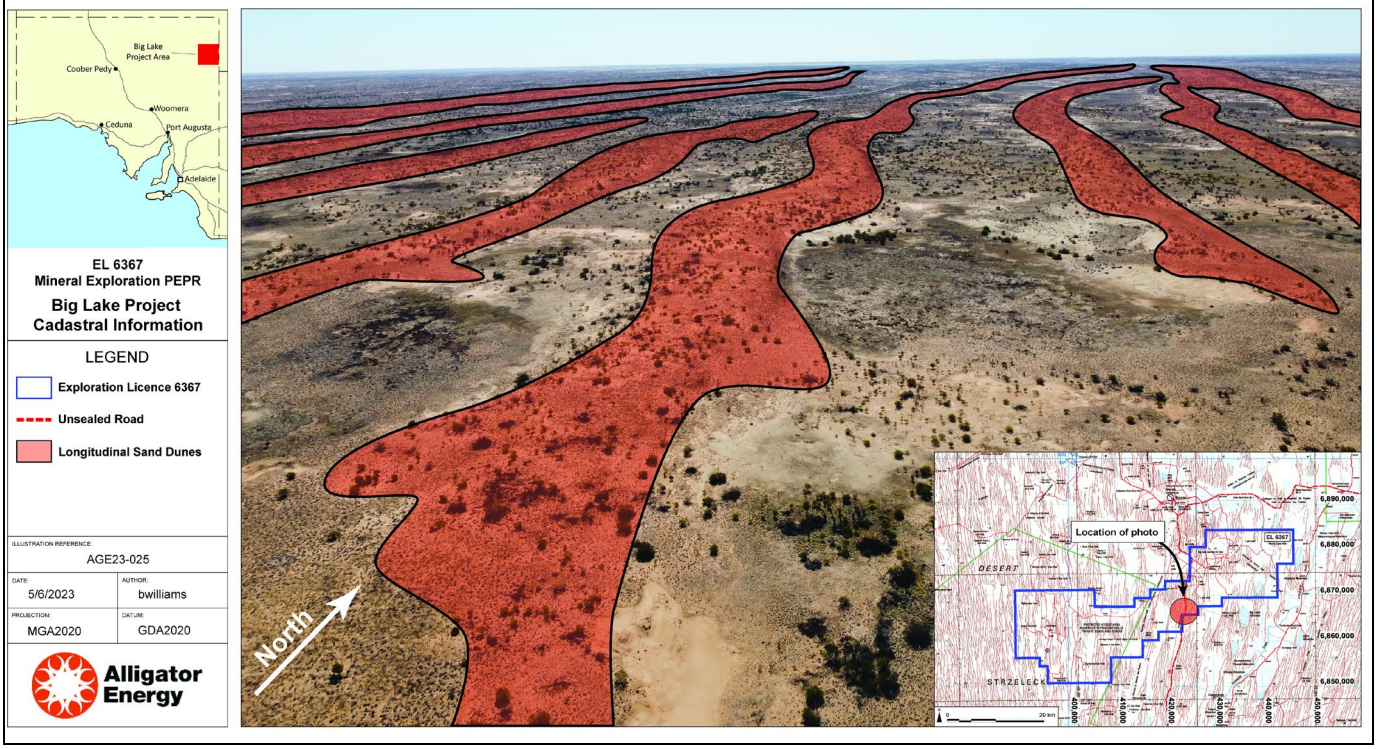
- that have been obtained during site visits
- that help describe relevant environmental and operational aspects in the PEPR.

To insert photos, copy and paste the photo into the template below. Resize photos to fit page width. Ensure that all information about each photo is completed and refer to the photo number in the relevant section of the PEPR.

Site identification	Date taken	Photo number & PEPR section reference	Easting (GDA94)	Northing (GDA94)	Zone	Details and Comments
20200318	18/03/2020	**Figure 1**	446619	6893435	54	Low relief, sparsely vegetated interdunal complex.

Site identification	Date taken	Photo number & PEPR section reference	Easting (GDA94)	Northing (GDA94)	Zone	Details and Comments
20200901	01/09/2020	**Figure 2**	472611	6897042	54	On dunes Acacia ligulata, Atalaya hemiglauca and Hakea spp. (tall shrublands) dominate the red siliceous sands, while the whitish siliceous sands support Zygochloa paradoxa, Triodia basedowii hummock grassland.

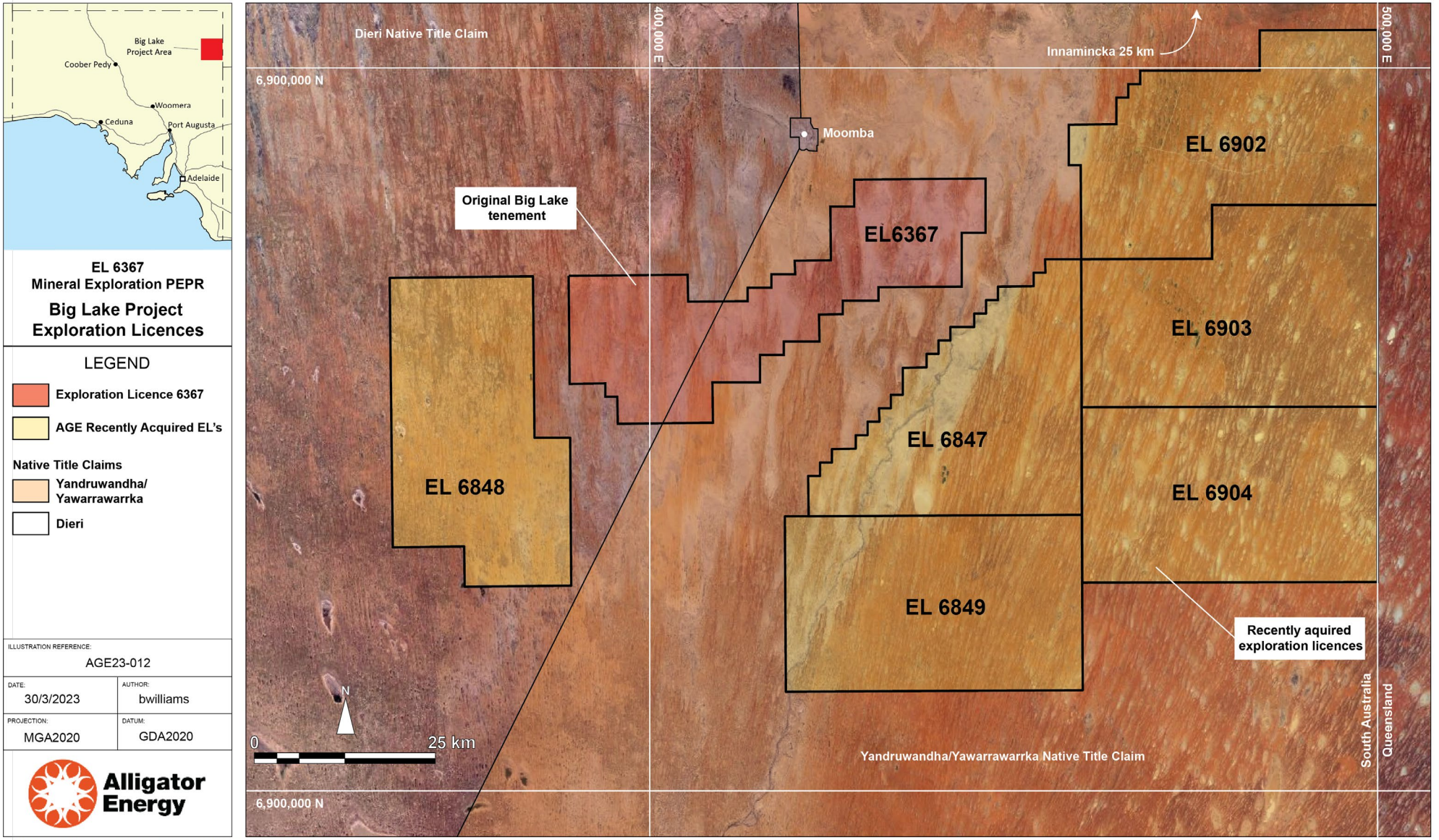
Site identification	Date taken	Photo number & PEPR section reference	Easting (GDA94)	Northing (GDA94)	Zone	Details and Comments
20230524	24/05/2023	**Figure 3**	424342	6866765	54	Low relief, sparsely vegetated interdunal complexes and longitudinal sand dunes (highlighted).



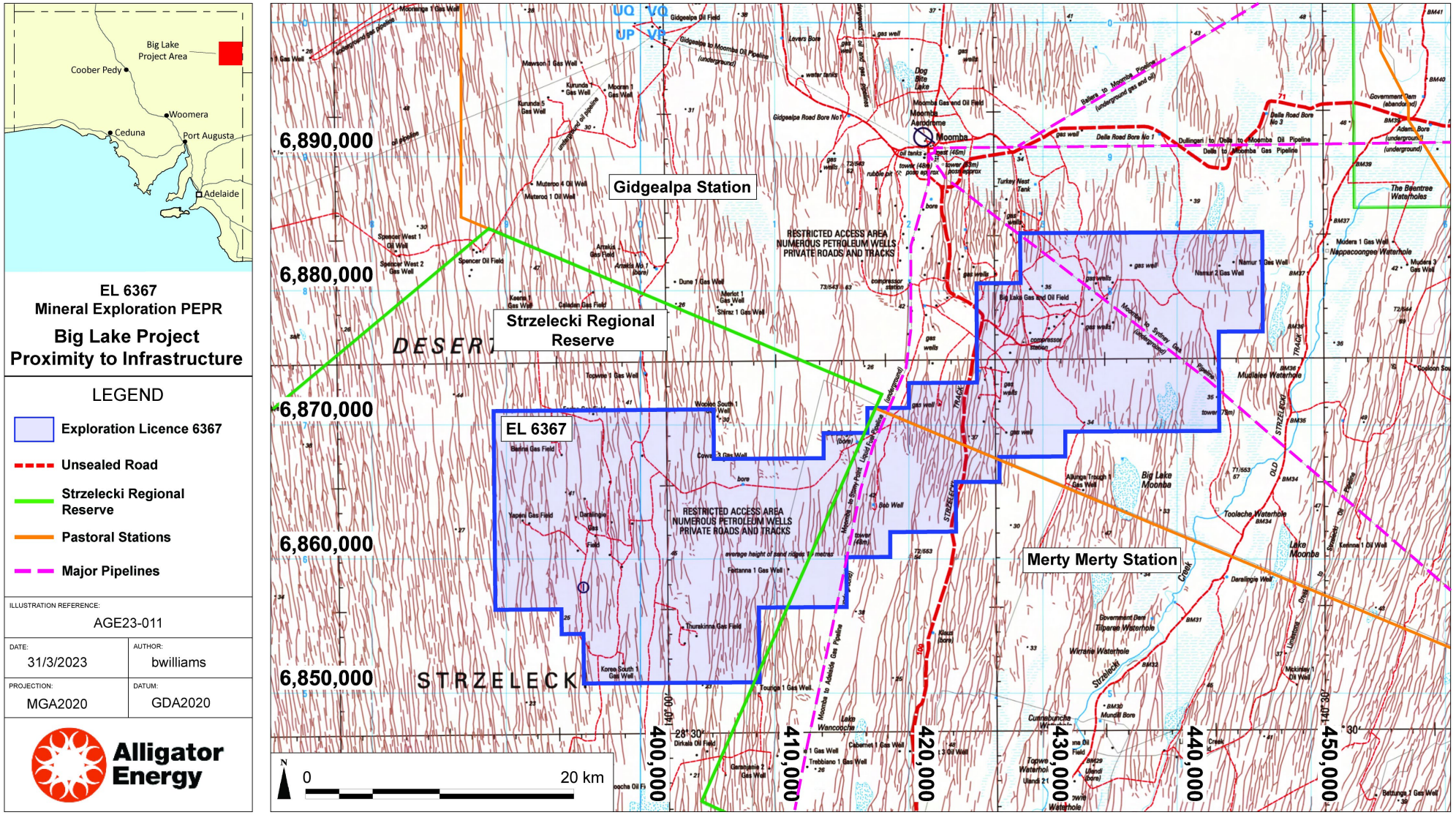
SECTION J – MAPS

Provide a map(s) showing the following information that is located adjacent to or within the proposed area of operations, where applicable:

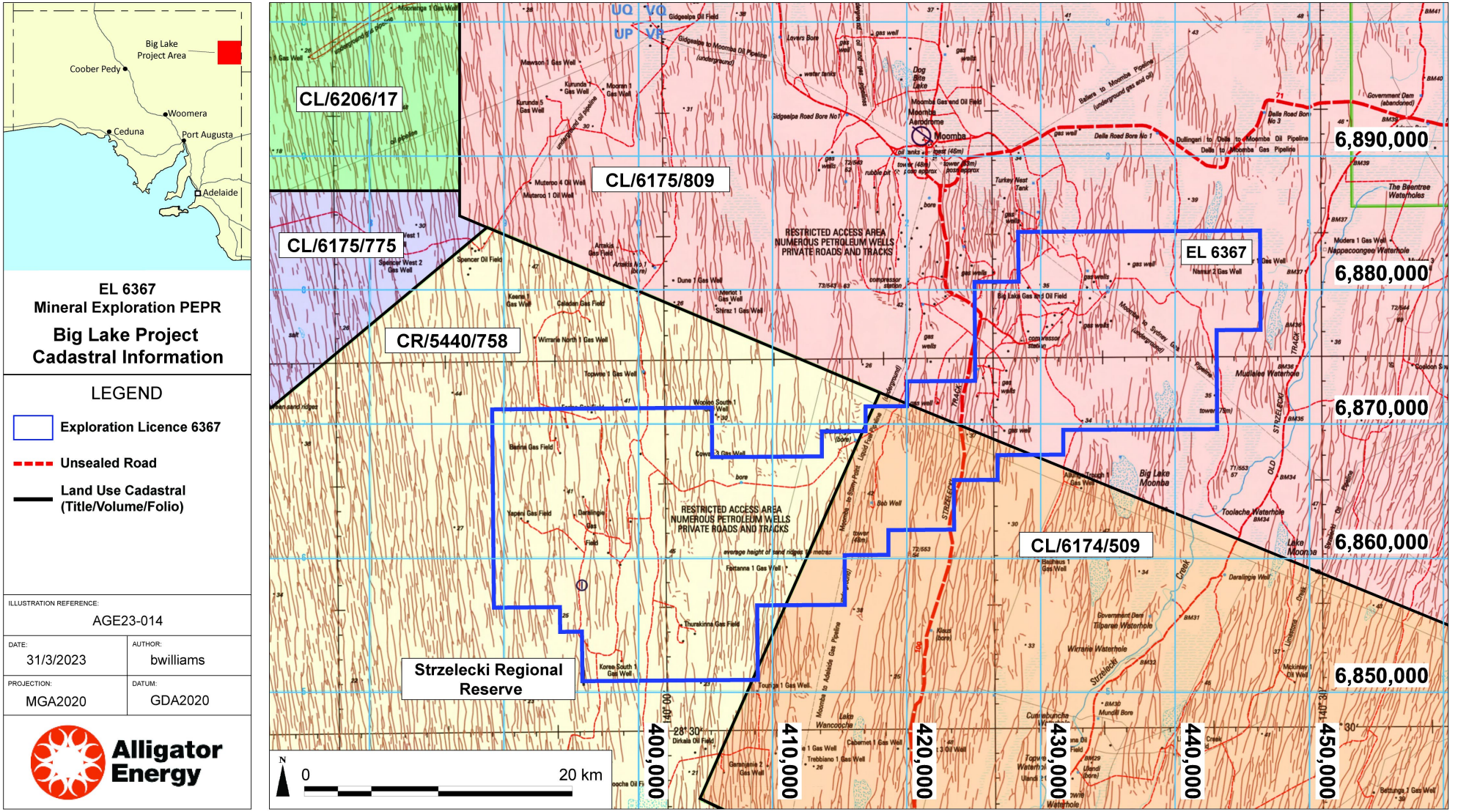
- Tenement boundaries **(Map 2)**.
- Proximity to infrastructure and housing **(Map 3)**.
- Cadastral information **(Map 4)**.
- Existing surface contours **(Map 3)**.
- Existing vegetation **(Maps 5 & 7)**.
- Location of the proposed exploration operations (includes drillholes, existing and new access tracks, drill traverses, campsites, laydown areas and other applicable information) and/or the target exploration areas **(Maps 1 & 9)**.
- Location of existing ephemeral and permanent rivers, creeks, swamps, streams or watercourses and water management structures **(Map 3 & 8)**.
- Location of towns, houses, existing roads, rails, fences, transmission lines, buildings, dams and pipelines **(Map 3)**.
- Known sightings of listed species **(Table 1)**.
- Location and extent of all environmentally sensitive areas **(N/A)**.
- Any relevant land use types (e.g. parks and reserves, Aboriginal freehold land, Woomera Prohibited Area) **(Map 6)**.
- Existing petroleum licences **(Maps 11 & 12)**.



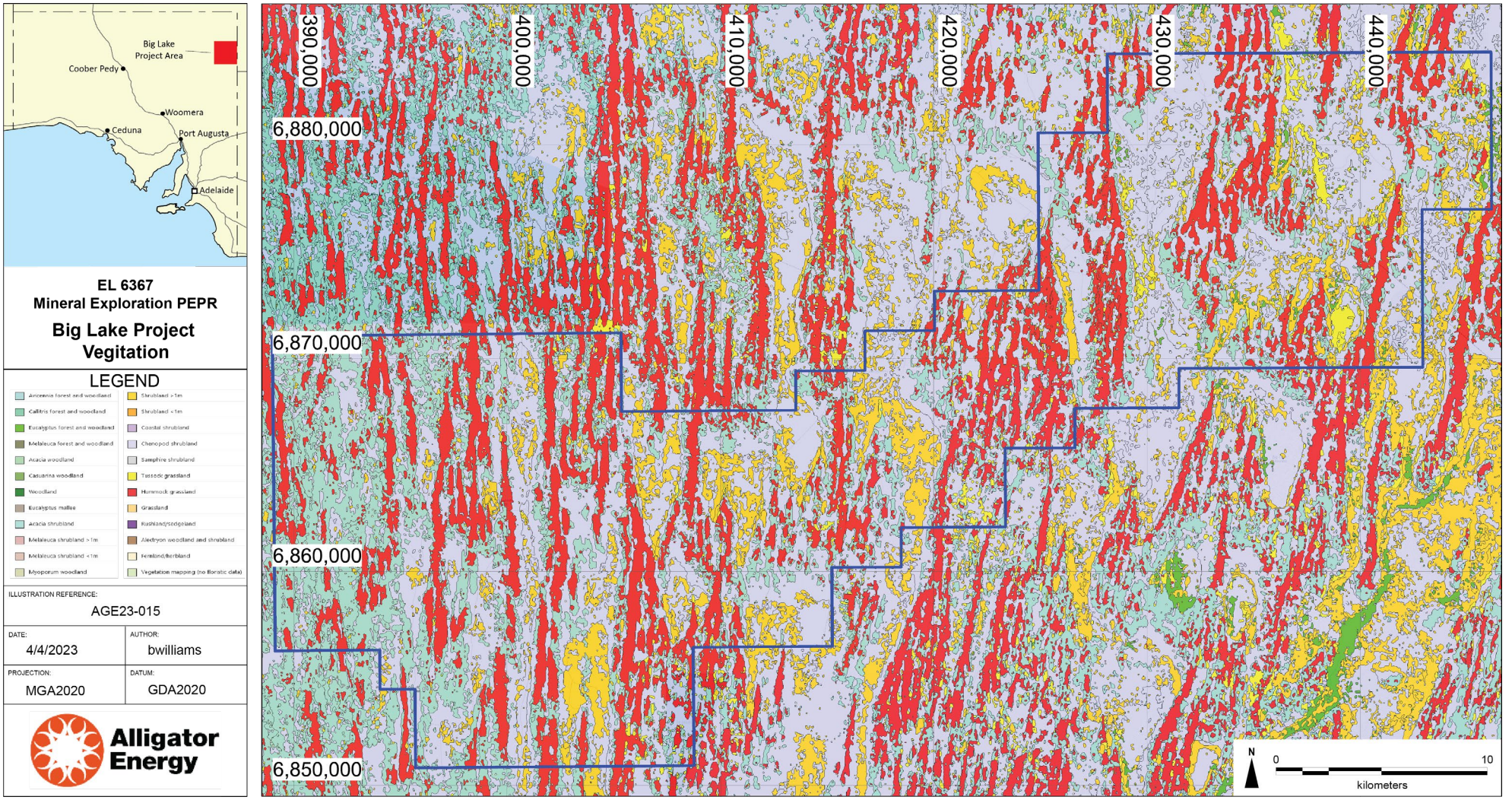
Map 2: Big Lake Project Exploration Licences and Native Title Overlay.



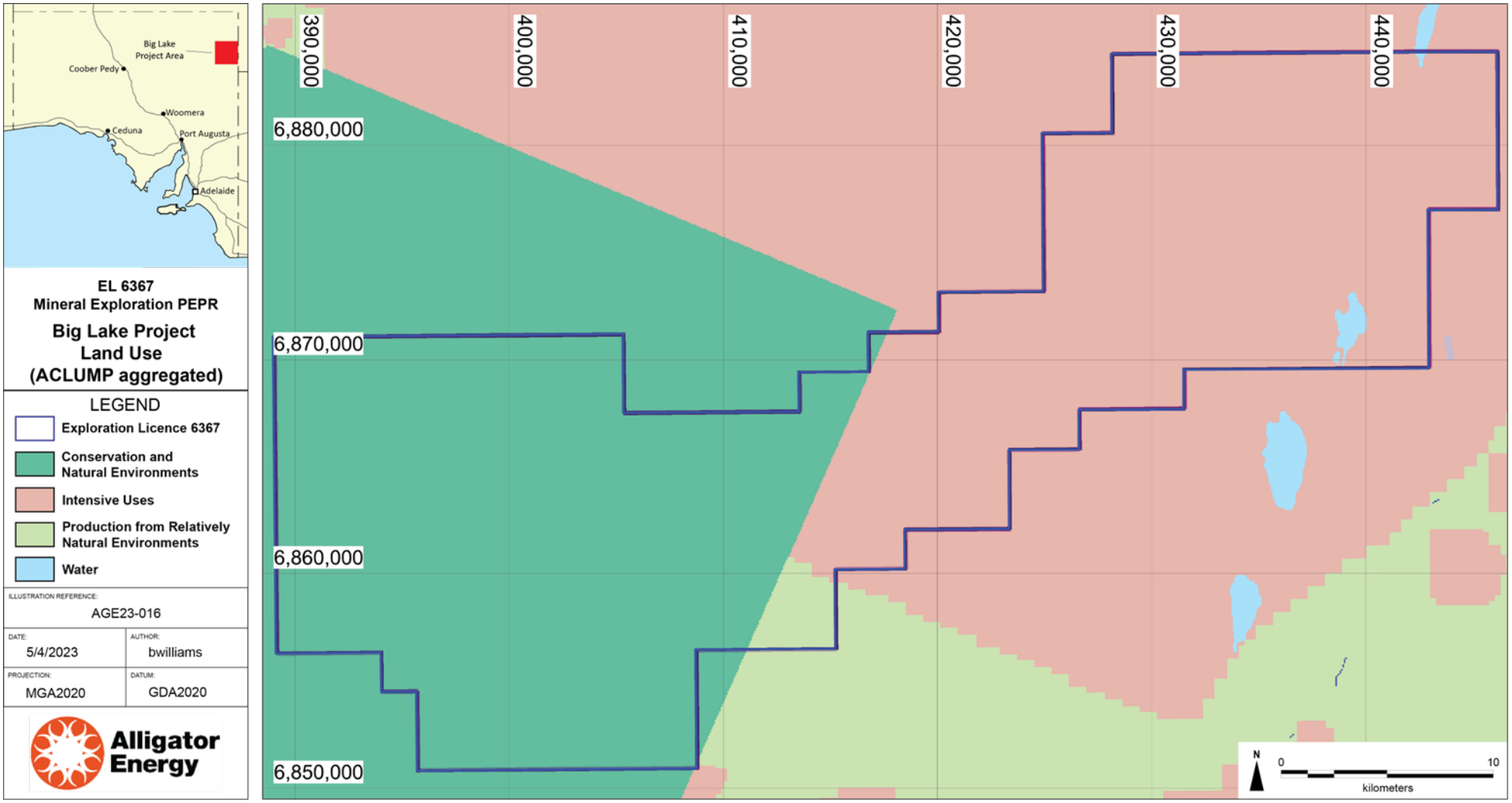
Map 3: Big Lake Project Proximity to Infrastructure.



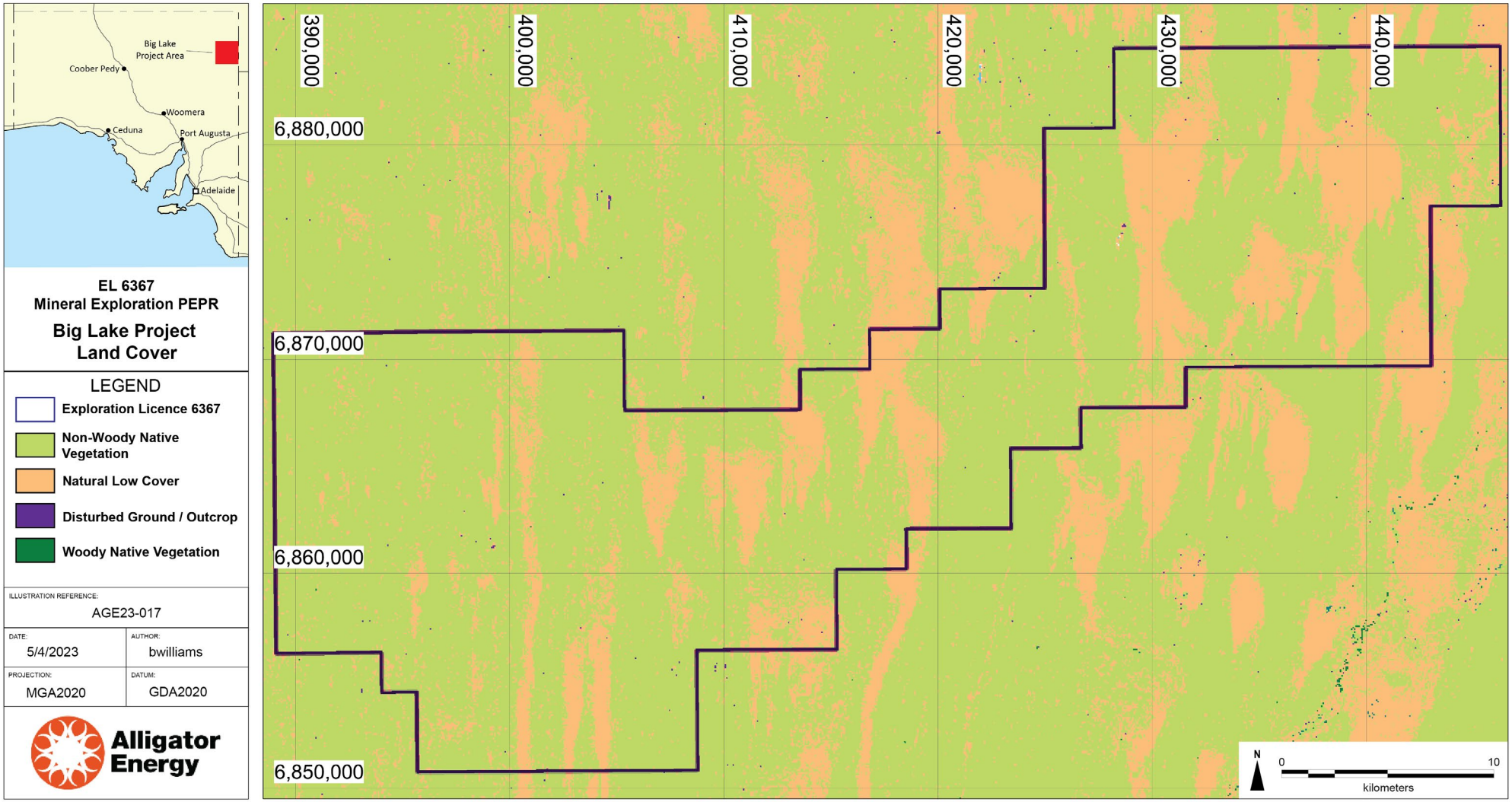
Map 4: Big Lake Project Cadastral Information.



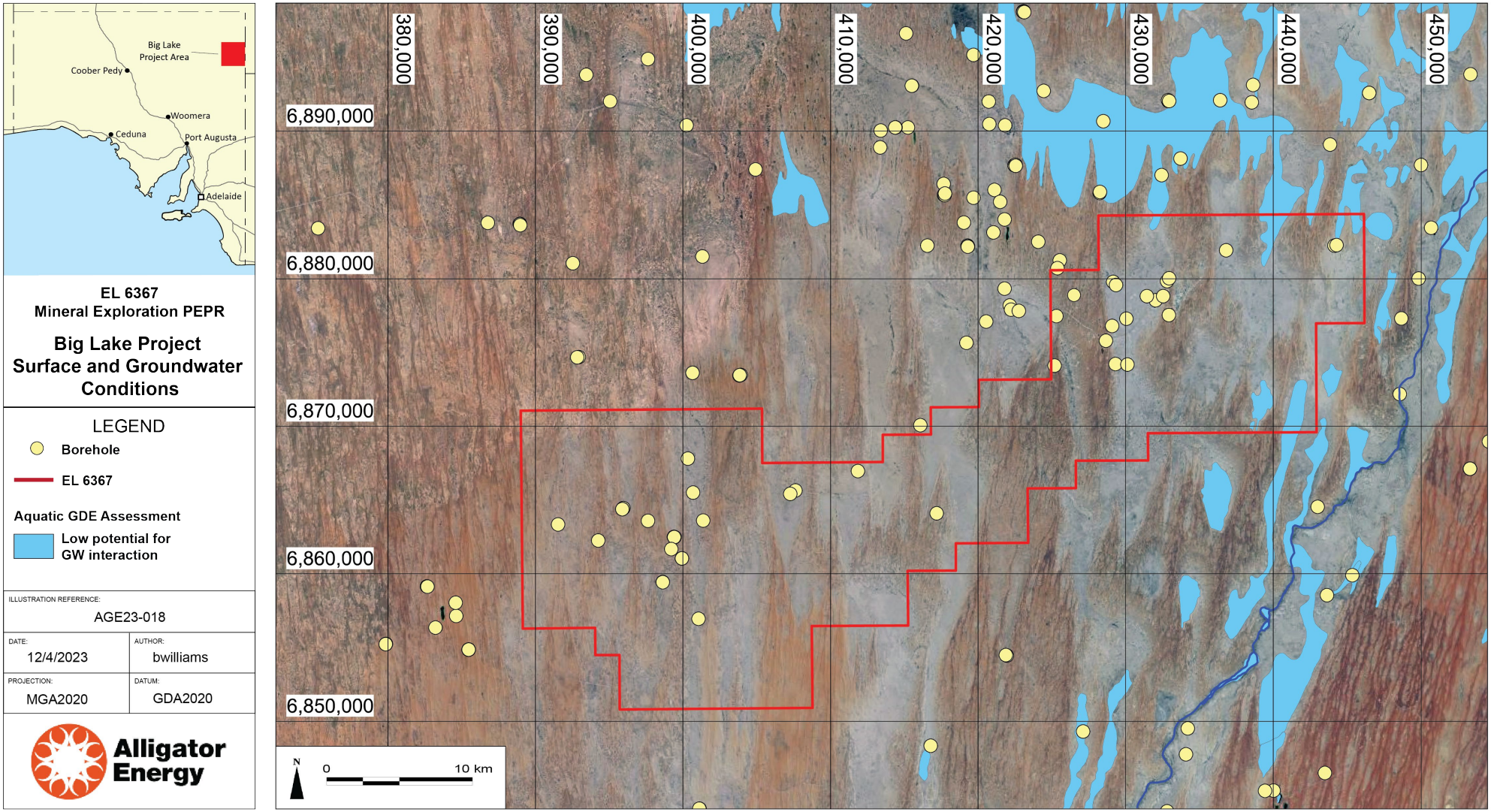
Map 5: Big Lake Project Vegetation Map.



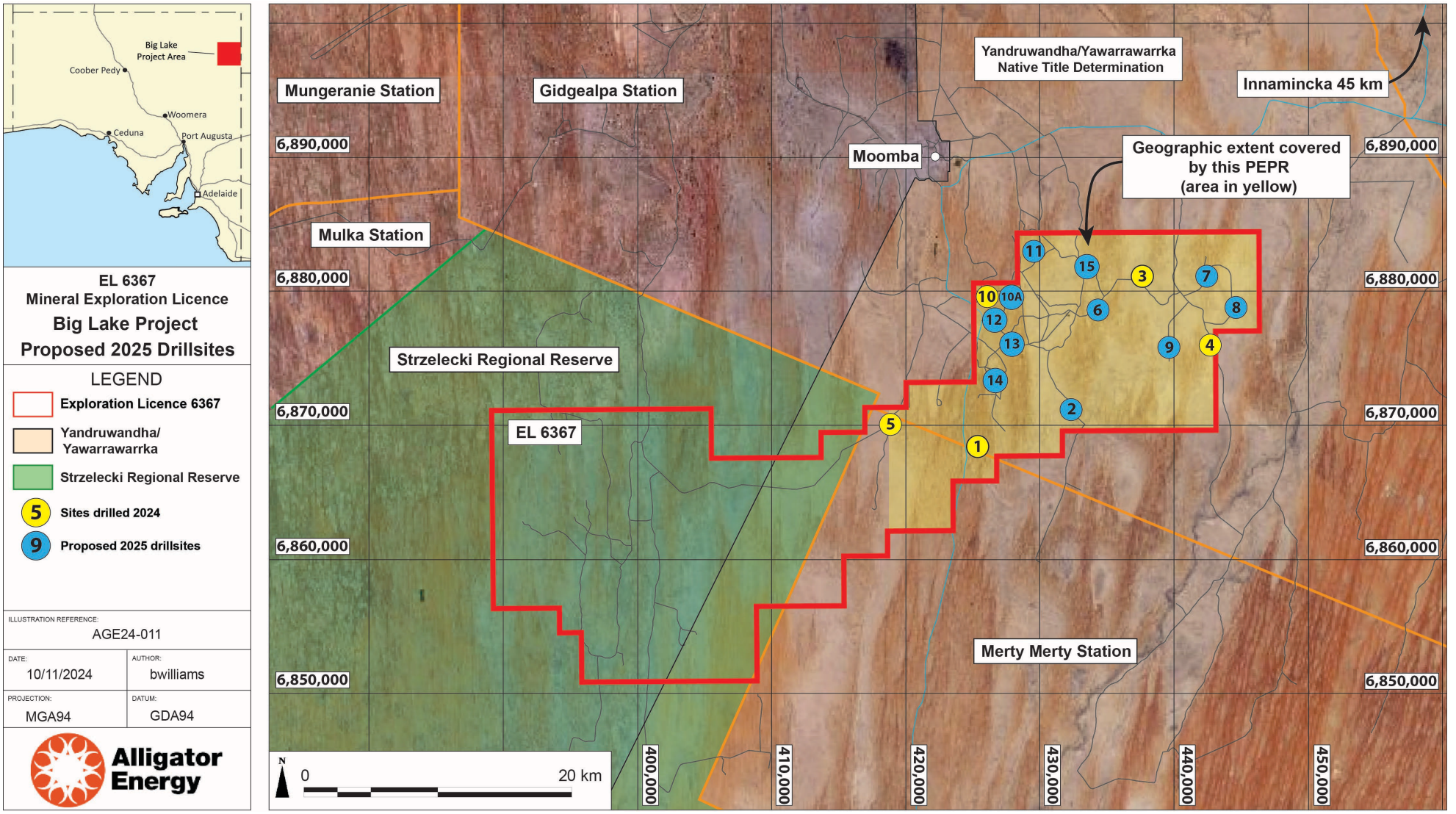
Map 6: Big Lake Project Land Use Map.



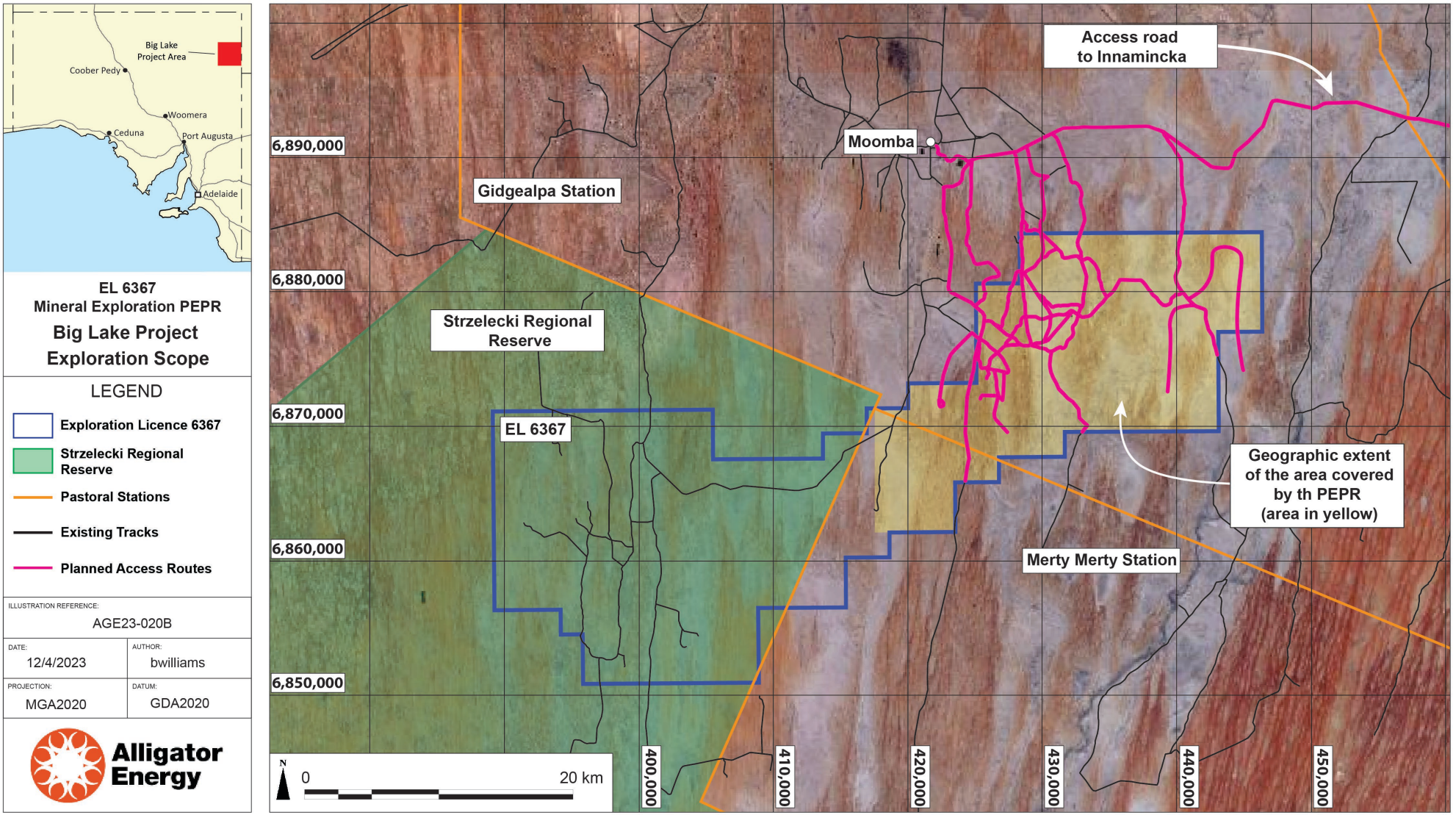
Map 7: Big Lake Project Land Cover Map.



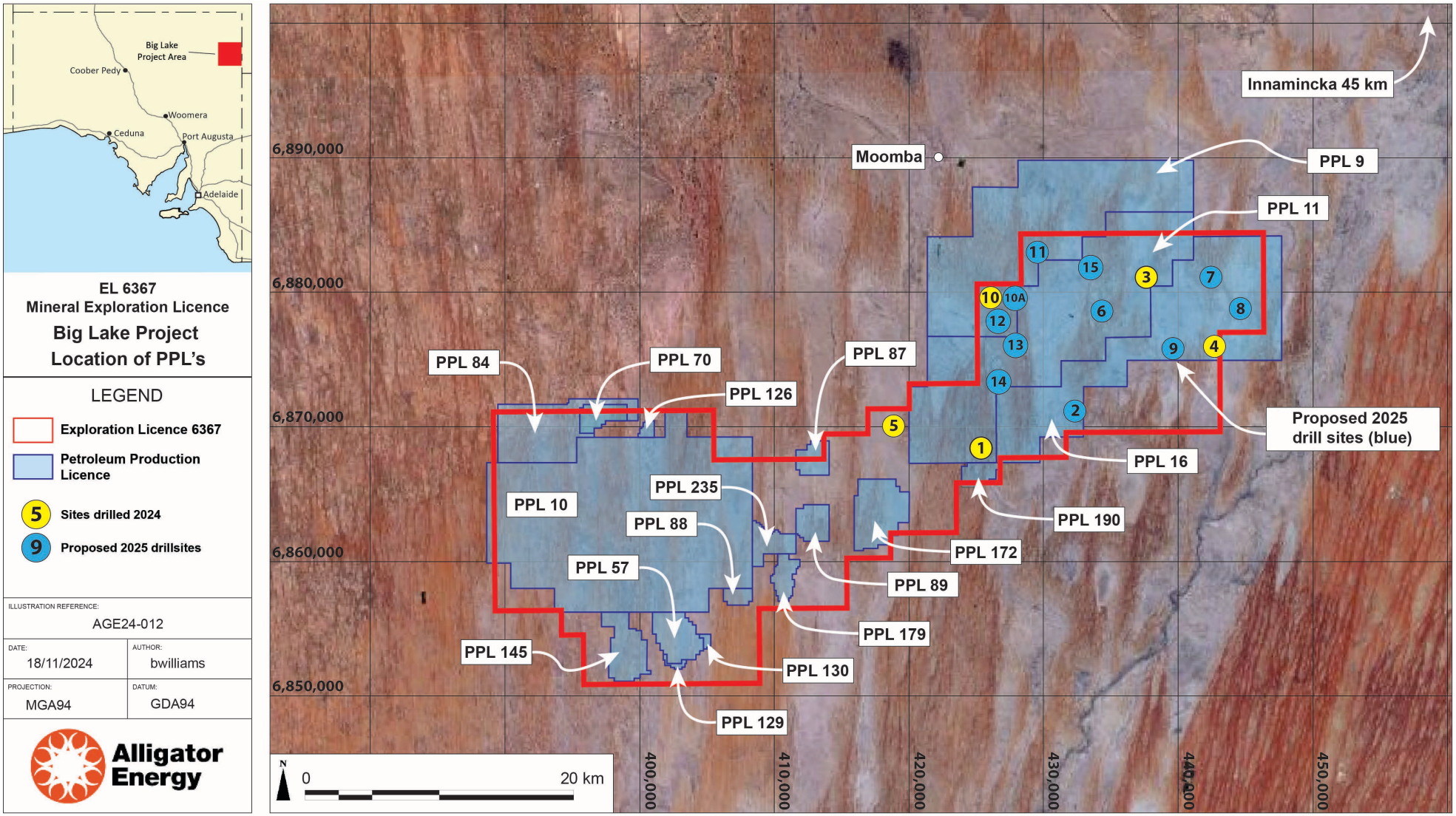
Map 8: Big Lake Project Surface and Groundwater Conditions.



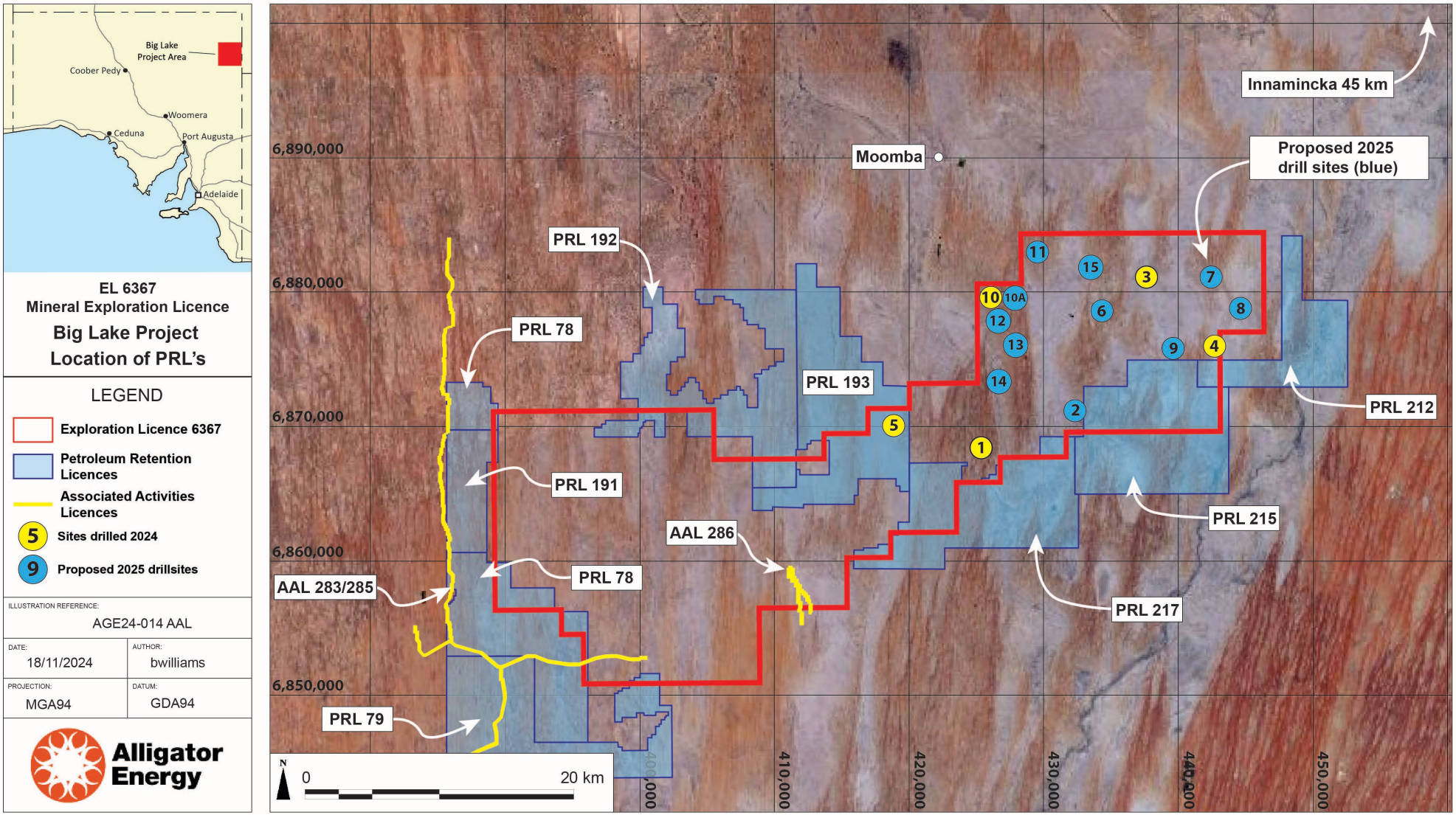
Map 9: Big Lake Project Exploration Scope.



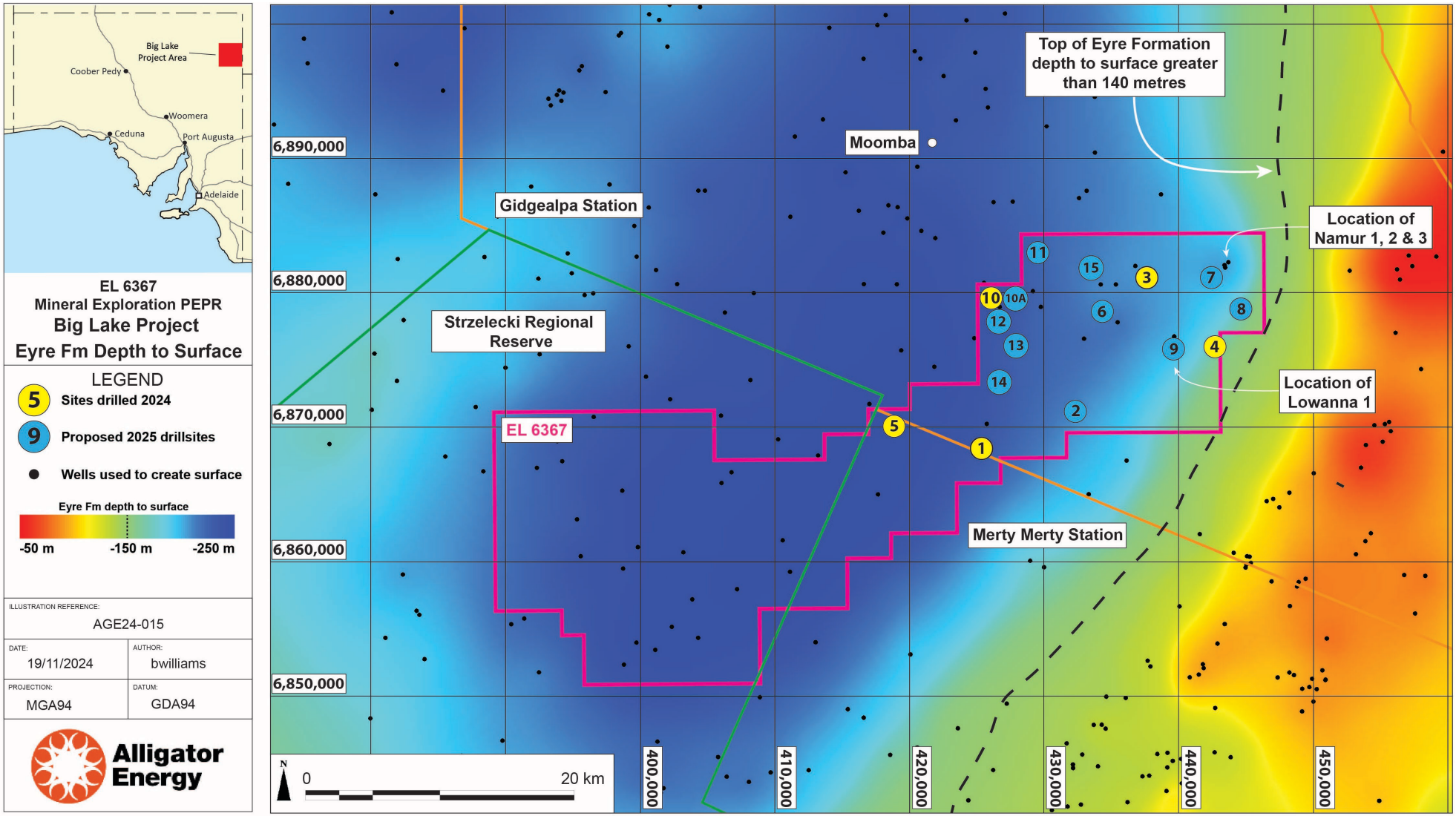
Map 10: Big Lake Project Planned Access Routes.



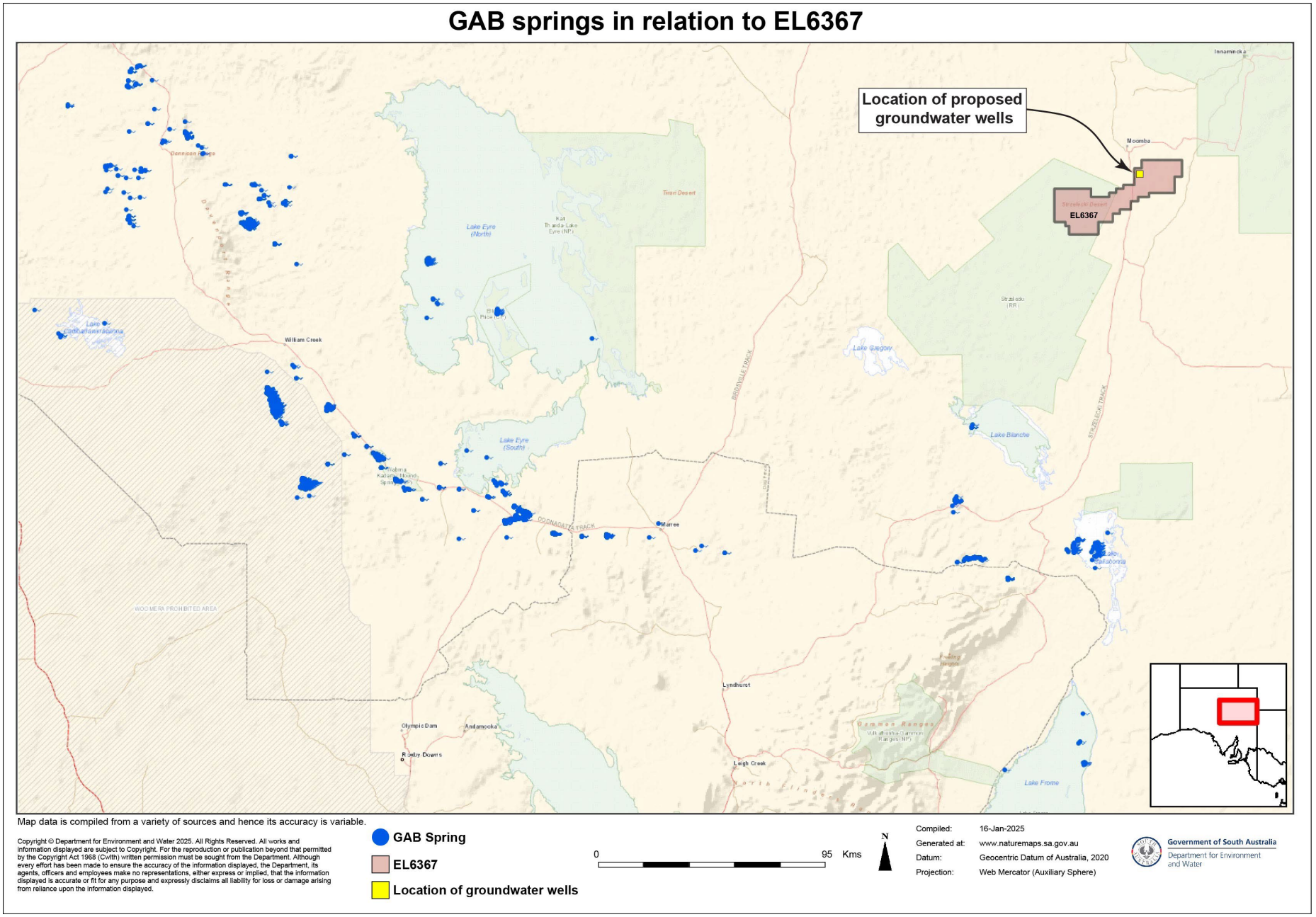
Map 11: Alligator Energy's EL6367 in relation to current Petroleum Production Licences in the Moomba region.



Map 12: Alligator Energy's EL6367 in relation to current Petroleum Retention Licences in the Moomba area.



Map 13: Stratigraphic picks from 68 petroleum wells indicate the Eyre Formations shallowest point across EL 6367 is 180 metres at Lowanna 1 (500 meters northeast of drill site 9) and 185 metres around Namur 1, 2 and 3 (1.2 km northeast of drill site 7). Structural contouring modelling of well picks indicate the formation shallows to 160 metres in the vicinity of drill sites 4 and 8.



Map 14: Alligator Energy's EL6367 in relation to GAB springs.

NSXCODE	CLASS NAME	SPECIES	COMMON NAME	NATIVE	NATIONAL RATING	STATE RATING	NUMBER OF RECORDS	DATE OF LAST RECORD
C04509	AVES	Amytornis modestus	Thick-billed Grasswren	Y	VU		1	29-May-1988
K00101	AVES	Anhinga novaehollandiae novaehollandiae	Australasian Darter	Y		R	1	26-Dec-1983
C00177	AVES	Antigone rubicunda	Brolga	Y		V	5	29-Oct-2013
E00186	AVES	Ardea intermedia plumifera	Plumed Egret	Y		R	1	16-Aug-2010
A00176	AVES	Ardeotis australis	Australian Bustard	Y		V	7	14-Aug-2022
K00129	AVES	Arenaria interpres interpres	Ruddy Turnstone	Y		R	1	01-Jan-1990
Q21136	AVES	Biziura lobata menziesi	Musk Duck	Y		R	2	30-Mar-2001
K00161	AVES	Calidris ferruginea	Curlew Sandpiper	Y	CR	E	1	01-Jan-1990
Z00147	AVES	Cladorhynchus leucocephalus	Banded Stilt	Y		V	3	04-Sep-2014
Y09304	AVES	Coturnix ypsilophora australis	Brown Quail	Y		V	1	16-Aug-2010
C00001	AVES	Dromaius novaehollandiae	Emu	Y	ssp	ssp	33	06-Aug-2019
K00233	AVES	Elanus scriptus	Letter-winged Kite	Y		V	17	17-Oct-2021
Q00236	AVES	Falco hypoleucos	Grey Falcon	Y	VU	R	9	27-Oct-2020
U00238	AVES	Falco subniger	Black Falcon	Y		R	6	25-Oct-2013
U00598	AVES	Grantiella picta	Painted Honeyeater	Y	VU	R	1	08-Jun-1980
G00231	AVES	Hamirostra melanosternon	Black-breasted Buzzard	Y		R	3	01-Jan-1990
K04077	AVES	Hieraaetus morphnoides	Little Eagle	Y		V	3	29-Oct-2020
U04118	AVES	Manorina flavigula	Yellow-throated Miner	Y	ssp	ssp	115	31-Aug-2016
K04173	AVES	Myiagra inquieta	Restless Flycatcher	Y		R	2	31-Mar-2001
M00306	AVES	Neophema chrysostoma	Blue-winged Parrot	Y		V	10	26-May-2019
S00297	AVES	Northiella haematogaster (NC)	Bluebonnet (Eastern and Naretha)	Y		ssp	47	28-Sep-2011
A00036	AVES	Phaps histrionica	Flock Bronzewing	Y		R	30	14-Aug-2022
E00178	AVES	Plegadis falcinellus	Glossy Ibis	Y		R	2	30-Mar-2001
A00060	AVES	Podiceps cristatus australis	Great Crested Grebe	Y		R	1	30-Mar-2001
M04182	AVES	Spatula rhynchotis	Australasian Shoveler	Y		R	2	26-Oct-2013
E00214	AVES	Stictonetta naevosa	Freckled Duck	Y		V	2	29-Oct-2013
M00154	AVES	Tringa glareola	Wood Sandpiper	Y		R	4	30-Oct-2013
M01482	MAMMALIA	Notomys fuscus	Dusky Hopping-mouse	Y	VU	V	230	23-Sep-2019
S01469	MAMMALIA	Pseudomys australis	Plains Mouse	Y	VU	V	1	13-Jan-2012
S02613	REPTILIA	Aspidites ramsayi	Woma	Y		R	49	25-Sep-2019
Q04192	REPTILIA	Austroblepharus kinghorni	Blacksoil Skink	Y		R	2	28-Oct-2020
G02695	REPTILIA	Pseudonaja guttata	Speckled Brown Snake	Y		R	2	23-Feb-2012

Table 1: Big Lake Project Rated Flora and Fauna

SECTION K – PUBLIC RELEASE

PEPR documents will be registered on the mining register and publicly released in full without the need to request consent from the tenement holder(s). Ultimately, it is the applicant's responsibility to ensure that confidential, or commercially sensitive, information is not included within the PEPR application.

SECTION L – SUBMISSION OF THE APPLICATION

An application for an Exploration PEPR or PEPR review, must be submitted in the following form, unless otherwise specified by the Director of Mines or an authorised officer:

- an electronic version of the PEPR must be submitted using the exploration PEPR template(s) provided on the DEM Minerals website,
- the electronic version must be submitted online through the DEM Minerals website using the exploration PEPR submission form,
- the electronic version must be submitted in one single Acrobat PDF file, and
- Microsoft Word-compatible files must be submitted if requested by the Director of Mines (or delegate), or other authorised officers.

Appendix 1

Protected Matters Report

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 14-Feb-2023

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	1
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	10
Listed Migratory Species:	8

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	13
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	2
Regional Forest Agreements:	None
Nationally Important Wetlands:	2
EPBC Act Referrals:	4
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	1
Geological and Bioregional Assessments:	1

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar Wetlands)		[Resource Information]
Ramsar Site Name	Proximity	Buffer Status
Coongie lakes	Within Ramsar site	In feature area

Listed Threatened Species			[Resource Information]
Status of Conservation Dependent and Extinct are not MNES under the EPBC Act. Number is the current name ID.			
Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Calidris ferruginea			
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Falco hypoleucos			
Grey Falcon [929]	Vulnerable	Species or species habitat known to occur within area	In feature area
Grantiella picta			
Painted Honeyeater [470]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Pedionomus torquatus			
Plains-wanderer [906]	Critically Endangered	Species or species habitat may occur within area	In feature area
Pezoporus occidentalis			
Night Parrot [59350]	Endangered	Species or species habitat likely to occur within area	In feature area
Rostratula australis			
Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area	In feature area
MAMMAL			
Dasyuroides byrnei			
Kowari, brushy-tailed marsupial rat, Byrne's crest-tailed marsupial rat [329]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Notomys fuscus Dusky Hopping-mouse, Wilkiniti [125]	Vulnerable	Species or species habitat known to occur within area	In feature area
Pseudomys australis Plains Rat, Palyoora, Plains Mouse [108]	Vulnerable	Species or species habitat may occur within area	In feature area
PLANT			
Frankenia plicata [4225]	Endangered	Species or species habitat likely to occur within area	In feature area

Listed Migratory Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat known to occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area	In feature area

Other Matters Protected by the EPBC Act

Listed Marine Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Chalcites osculans as Chrysococcyx osculans](#)			
Black-eared Cuckoo [83425]		Species or species habitat known to occur within area overfly marine area	In feature area
[Gallinago hardwickii](#)			
Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area overfly marine area	In feature area
[Merops ornatus](#)			
Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
[Motacilla cinerea](#)			
Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area	In feature area
[Motacilla flava](#)			
Yellow Wagtail [644]		Species or species habitat known to occur within area overfly marine area	In feature area
[Neophema chrysostoma](#)			
Blue-winged Parrot [726]		Species or species habitat known to occur within area overfly marine area	In feature area
[Rostratula australis as Rostratula benghalensis (sensu lato)](#)			
Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area overfly marine area	In feature area

Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status
Innamincka	Regional Reserve	SA	In buffer area only
Strzelecki	Regional Reserve	SA	In feature area

Nationally Important Wetlands		[Resource Information]
Wetland Name	State	Buffer Status

Wetland Name	State	Buffer Status
Coongie Lakes	SA	In buffer area only
Strzelecki Creek Wetland System	SA	In buffer area only

EPBC Act Referrals

[Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
Expansion of the Olympic Dam copper, uranium, gold and silver mine, processing plant and associated	2005/2270	Controlled Action	Post-Approval	In feature area
Not controlled action				
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
QSN3 Project, expand 935km gas pipeline and supporting infrastructure	2009/5072	Not Controlled Action	Completed	In feature area
Not controlled action (particular manner)				
QSN Underground Gas Pipeline	2008/4043	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only

Bioregional Assessments

SubRegion	BioRegion	Website	Buffer Status
Cooper	Lake Eyre Basin	BA website	In feature area

Geological and Bioregional Assessments

Name	State	Website	Buffer Status
Cooper GBA region	QLD, SA, NSW	GBA website	In feature area

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

Department of Climate Change, Energy, the Environment and Water
GPO Box 3090
Canberra ACT 2601 Australia
+61 2 6274 1111

Appendix 2

Big Lake Radiation Management Plan

Alligator Energy Ltd

ACN 140575604

Big Lake Uranium Project

RADIATION MANAGEMENT PLAN

Rev 2

December 2023

CONTENTS

1 INTRODUCTION

1.1 Project Description

Alligator Energy Limited (Alligator Energy), an ASX listed company, is exploring for uranium in the Cooper Basin region of South Australia (SA) approximately 45km south of Innamincka.

The Big Lake Uranium Project (BLU) focusses on the REDOX-controlled "roll front" uranium mineralisation primarily in the Eyre and Namba formations of the Lake Eyre Basin. The potential uranium source is interpreted to be from weathering/leaching of the uranium enriched Big Lake Granite Suite. The Big Lake Granite Suite was initially recognised from regional heat flow maps and elevated geothermal gradients. They were subsequently recognised in geophysical data and later intersected in petroleum wells.

The current Big Lake Uranium project licences held and/or operated by Alligator Energy or its wholly owned subsidiaries as of August 2023 are shown below:

Tenement Number	Name	Km^2
EL6367	Big Lake	819
EL6847	Big Lake	843
EL6848	Big Lake	878
EL6849	Big Lake	979
EL6902	Big Lake	941
EL6903	Big Lake	996
EL6904	Big Lake	976

The Radiation Management Plan is intended to cover the above EL's.

1.2 Project Personnel

The workforce for exploration programs on the above tenements will typically comprise between about 6 and 20 personnel, including geologists, field assistants and drilling contractors. Site radiation safety implementation and supervision will be provided by designated and trained personnel with the appropriate licencing requirements under the SA Radiation Protection and Control Act 2021 to use and handle radioactive substances and act as radiation safety officers for Alligator Energy. Senior management, including the Chief Executive Officer, will be responsible for approving and facilitating the implementation of the radiation management plan.

1.3 Purpose and Objectives of the Radiation Management Plan

Uranium is widely present in the Earth's crust, averaging about 3 parts per million (ppm) in ordinary soil, and up to approximately 30 ppm in some granites. Uranium ores range from 0.03% (300 ppm) up to a few percent (> 10,000 ppm).

During exploration activities (e.g.) drilling and sampling materials containing uranium, workers are potentially exposed to radiation. Corporate 'duty of care' and risk management requirements specify the need to *monitor* and *manage* radiation to control and minimize worker's radiation doses to acceptable levels. It is also necessary to minimize spills of materials which could cause contamination of the environment, and to avoid release of radioactively contaminated items and equipment off site before they have been cleaned of any radioactive contamination.

The Alligator Energy Radiation Management Plan for the Big Lake Project has been prepared to comply with the requirements of the EPA SA and Department for Energy and Mining (DEM) for the management of radiation.

Guidelines provided by the EPA require companies exploring for uranium to:

- Manage radiation risks during exploration.
- Develop and implement a radiation management plan.
- Designate a suitably competent radiation safety officer (Mike Barlow – AGE Exploration Manager).
- Implement measures to minimise radiation exposure to workers and members of the public.
- Provide general training in radiation safety to all employees and contractors.
- Monitor workers radiation exposure.
- Manage the transport of radioactive materials by following the ARPANSA Code of Practice for Safe Transport of Radioactive Materials.
- Manage the storage of radioactive materials by warehousing samples securely, away from members of the public and monitoring the dose rates in the storage area.

1.4 **Legislation**

Current SA and Commonwealth legislation and other requirements including Codes, Guides and so on relevant to radiation management include the following:

- Dangerous Goods Act 1998 and Regulations.
- Mineral Titles Act and Regulations.
- Mining Management Act 2008 and Regulations.
- Radiation Protection and Control Act 2004.
- Radioactive Ores and Concentrates (Packaging and Transport) Act 2007 and Regulations Atomic Energy Act 1953.
- Code of Practice for Safe Transport of Radioactive Materials 2019, ARPANSA.
- Code of Practice for Radiation Protection and Radioactive Waste Management in Mining and Mineral Processing 2005, ARPANSA.
- International Atomic Energy Agency Safety Standard Series SSR-6, Regulations for the Safe Transport of Radioactive Material 2018.
- Safety Guide for the Management of Naturally Occurring Radioactive Material (NORM), 2008, ARPANSA.
- Radiation protection guidelines on mining in South Australia: Mineral exploration (EPA) (Feb 2010).
- Radiation Protection and Control Act 2021(RPC Act).
- Radiation Protection and Control Regulations 2022.
- Code for Radiation Protection in Planned Exposure Situations (2020).
- ICRP 137: Occupational Intakes of Radionuclides: Part 3 (2017).

2 RADIATION

Radioactive atoms, including atoms of uranium, radium, and thorium, carry excess energy and are unstable. These atoms break down, or decay, to make new 'daughter' atoms and give up some of their excess energy in tiny 'packets' of energy called alpha, beta, and gamma radiation. Uranium is the 'parent' of a series of other radioactive elements shown in the **U-238 Decay Chain** table below. Alpha, beta and gamma radiations have different penetration into solid matter:

- ***Alpha particles*** are electrically charged helium nuclei, ejected at very high speed from the atom at the instant of breakdown. They are slowed down and stopped by about the thickness of a sheet of paper (say 50 microns, 0.05 mm), and by about 3 cm of air. However, they make a dense ionization damage trail along the stopping track.
- ***Beta particles*** are electrons formed by the transformation of a neutron to a proton, emitted by the atom at a very high speed. They can travel a few centimetres in solids and many centimetres or metres in air before stopping, but carry less energy, and give it up in a much more spread out and less dense track (so the damage is very much less).
- ***Gamma rays*** are electromagnetic energy, like x-rays, and are very penetrating, and can pass with only a little reduction in intensity, through several centimetres of solids.

U-238 Decay Chain

Nuclide	Radiation	Half-life
Uranium 238	α	4.5 billion years
Thorium 234	β, γ	24 days
Protactinium 234	β	1.2 minutes
Uranium 234	α	250,000 years
Thorium 230	α	80,000 years
Radium 226	α, γ	1,600 years
Radon 222 (gas)	α	3.8 days
Polonium 218	α	3 minutes
Lead 214	β, γ	27 minutes
Bismuth 214	β, γ	20 minutes
Polonium 214	α	160 microsecs
Lead 210	β, γ	22 years
Bismuth 210	β	5 days
Polonium 210	α	140 days
Lead 206	---	Stable

α = alpha particle, doubly charged helium nucleus, 2 protons + 2 neutrons.
β = beta particle, high speed electron emitted from nucleus.
γ = gamma ray, electromagnetic radiation.

2.1 Radiation Dose

When radiation is absorbed by matter it causes damage to the chemical molecules making up the material, and the amount of damage is proportional to the energy delivered per unit mass. Because radiation can ionize atoms, it can damage chemical structures in living cells, such as DNA, the information-carrying molecules that control what the cell does. The biological damage to living tissue by radiation energy is described as the "dose".

2.2 Dose Units

Radiation dose to humans is measured in units called **sieverts (Sv).** One (1) sievert is a large dose, and therefore in normal situations, doses are discussed in units of **millisieverts (mSv),** which equal one-thousandth of a sievert, and **micro-sieverts (μSv),** which equal one millionth of a sievert.

2.3 Radiation Dose Limits

Radiation dose limits are based on the observed health effects in people exposed to radiation in the past (e.g.) Japanese atom bomb survivors, overexposed medical patients and radiologists. A dose of 1 sievert is assumed to produce a risk of radiation-caused cancer of 5% in the exposed person's lifetime.

The International Commission on Radiological Protection (ICRP) recommends 1 Sievert of dose as the lifetime limit for radiation workers and, *assuming fulltime work for 50 years in a "radiation job"*, has set one-fiftieth of a Sievert as the yearly dose maximum. This is equal to 20 millisieverts per year for radiation workers.

Typical Doses for Radiation Workers

- Most full-time radiation workers receive an annual dose generally between 1 and 3 millisieverts, up to a maximum of about 5 to 6 millisieverts. Typical professions are uranium miners, mineral sand mine separation plant operators, industrial pipeline radiographers, medical radiologists, nurses and radiotherapy technicians.
- Fulltime work on a drill rig on a uranium prospect could result in a dose of approximately 0.2 to 0.6 mSv in a year, depending mainly on dust control and ore grade.

Typical Doses for Members of the Public

- The average dose from natural background radiation received by the general public is about 2 or 3 mSv per year.
- Medical radiation procedures generally give the patient somewhat more radiation. For example, a 'CAT' scan covering the chest and abdomen gives about 10 to 20 mSv; a heart stress test scan using radiopharmaceuticals gives about 12 mSv and other nuclear medicine scans generally give 5 or 6 mSv.
- The Annual Limit for members of the public is set at 1 mSv per year over and above natural background. This considers the need for lower dose limits for children and pregnant women and the fact that non-workers may have ongoing health problems.

2.4 Radiation Dose Delivery Pathways

There are four possible pathways for the delivery of radiation doses to the human body that should be considered in any mining/exploration situation. These pathways may require active control, depending on the circumstances.

- **Inhalation** (radon and radon daughters, and airborne dust containing long-lived alpha-emitting uranium, thorium, and radium).
- **Ingestion** (radioactive dust contamination on hands transferred to mouth whilst eating or smoking).

- **Irradiation** (gamma radiation from mineralised drill cuttings, core, sludges or radiation sources), and
- **Absorption** (through broken skin - cuts and abrasions).

The potential for inhalation of radon gas progeny will generally be trivial in pre-mining activities such as exploration and is potentially only important in underground uranium mines where a high standard of ventilation is necessary.

For work on the Big Lake Uranium Project, inhalation and ingestion of dust containing radioactive atoms, and gamma irradiation, are the main pathways that could potentially require control. Gamma radiation monitoring using survey instrument is very useful, as it gives 'early warning' of the presence of radioactive materials so that controls can be put in place as necessary.

2.5 Performance Targets

The following dose limits are applicable:

- 1 mSv per year for a member of the public.
- 20 mSv per year, averaged over a period of 5 consecutive calendar years, for a worker. The dose for a worker may not exceed 50 mSv in any one year.
- Doses shall also be ALARA (As Low As Reasonably Achievable) with social and economic considerations taken into account.

3 RADIATION DOSE CONTROL MEASURES

The general guiding principle in all radiation protection is to try to keep doses "As Low As Reasonably Achievable" (ALARA), with social and economic factors considered.

3.1 Protection Against External Radiation Sources (direct exposure to x-rays or gamma rays)

- **Time** - minimise the time you are exposed to the radiation.
- **Distance** - keep your distance from the radiation source (the inverse square law says that double the distance will give a quarter of the dose rate).
- **Shielding** - use some absorbing shielding between you and the radiation source (like sand, lead, steel or soil).

Note: there are no gamma ray exposure situations in uranium exploration that will need active control such as listed above.

3.2 Protection Against Inhalation of Airborne Contamination (airborne dust)

During uranium exploration, the main requirement is ***control of radioactive dust***. Radioactive dust can be **inhaled** and/or **ingested** ("Don't eat the dust; don't breathe the dust").

- Implement effective dust controls and ventilation (see section 4.1) - this is important in both drilling operations (particularly RAB/AC drilling) and in sample preparation (splitting, pulverizing, cutting).

3.3 Protection against Ingestion of Surface Contamination (dirt on your hands)

- Implement good housekeeping and personal hygiene practices, simple washing is effective - washing your hands adequately removes all dirt and mud, whether it is carrying radioactive substances or not.

4 WORK PROCEDURES

4.1 Occupational Hygiene and Dose Control

Hygiene

- When handling soils, drill core or cuttings, workers should be aware that samples may contain radioactive material. It is important to reduce the amount of dust generated during exploration activities and minimize inhalation of that dust. If the work activities are unavoidably dusty, workers must:
- Use dust masks or respirators - simple P1 standard half face disposables are satisfactory.
- Sweep/clean up any visible dust.
- Stay out of any dust plumes, mist or spray.
- Prior to eating, drinking or smoking it is important to wash your hands and face to remove dust and thus prevent or minimise ingestion of that dust.
- Shower and change clothes at the end of shift.

Dose control

- Radon progeny (radon daughters) in air will not require any active control but will be monitored and reported. A baseline radiation survey (measured in micro-sieverts) will be undertaken prior to the commencement of drilling operations. The same instrumentation will be used for all measurements thereafter for continuity purposes.
- Where uranium minerals are stored in sealed containers or poorly ventilated locations, natural ventilation shall be utilized for 15 minutes prior to worker access (e.g. opening drums or containers containing uranium mineralized ore 15 minutes prior to undertaking any work with samples or within containers).
- Employees made aware gamma dose can arise when working on a substantial outcrop of mineralization.

Provided these rules are followed, the radiation dose that you will receive will be well below the member of public limit (1msv per year).

4.2 Environmental Contamination Control

- All drill cuttings and drilling sludge should be cleaned up and appropriately disposed of as soon as practicable after the drillhole has been completed.
- Any mineralised cuttings/sludge (material with a surface count rate in excess of 2.5 times background) can be disposed of down hole or otherwise buried to a depth of at least 0.2m or greater to prevent future dispersion by rain and/or wind action.

4.3 Site Departure Clearance Checks

- Nothing should go off site if it is contaminated with radioactive dust or mud. This includes personal tools, heavy equipment, vehicles, drill rigs, or personnel and clothing.
- Radioactive contamination can be easily removed like any other dirt simply by washing.
- After washing, items can be checked with an alpha probe for any residual contamination. Repeated washing and checking should continue until under the surface contamination limit of 0.4 Bq/cm^2.
- Plant and equipment must be issued with a clearance certificate prior to leaving the site.
- Clearance for leaving the site is given by the RSO.

5 MONITORING FOR THE BIG LAKE PROJECT

Radiation monitoring will be carried out to:

- Provide data for radiation dose estimation.
- Check the efficiency of control/mitigation measures that have been put in place.
- Provide feedback to workers, management, and regulatory agencies as required.
- Provide baseline radiation survey data for any future feasibility or environmental impact assessments.

5.1 Gamma Irradiation Monitoring

OSL Badges

- Personal OSL (Optically stimulated luminescence) radiation dose badges will be issued to every site worker. These badges are to be always worn during working hours and kept on a badge board at camp during non-working hours.
- The badges are obtained as a commercial service from the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) Laboratory in Melbourne, a section of the Commonwealth Department of Health.
- Badges will be sent for analysis after 12 weeks and a replacement will be issued. Workers are responsible for their badges and will be charged a replacement fee if the badge is lost.
- The results from the badge analysis will be available to workers as an annual dose letter, or as an individual report upon request.

Personal Dosemeter

- Personal dosemeters may be issued to workers for short term use to check radiation exposure at any time and at any location.
- The dosemeters provide digital readout of radiation exposure.

Gamma Survey Monitoring

- Gamma radiation during exploration work, including drilling, is not expected to require any active control measures. However, a scintillometer or geiger counter will be used to check drill core and cuttings for the presence of radioactive elements.
- The scintillometer or geiger counter may also be used for other general gamma radiation monitoring.

5.2 Dust Inhalation

- The potentially highest exposed workers (i.e. those closest to the drill rig cyclone) will be required to wear a personal air sampling pump once a month to provide information on airborne dust contamination levels. The pump draws air from the wearers 'breathing zone' through a filter on which airborne dust is trapped. The filter is later counted by an alpha radiation counter to assess the level of contamination in the air.
- On dusty jobs where there is known uranium mineralisation, or uranium concentrations greater than 400 ppm have been intersected while drilling, radionuclides in airborne dust will be monitored using a personal air sampler for shift-average assessments.
    - The intent is to take an adequate but limited number of shift samples so as to obtain a statistically sound average.

- The filter from the personal air sampler will be counted in an alpha drawer assembly to determine the shift-average airborne alpha-emitting radionuclides concentration, after a period of 24 hours (to allow short lived products to decay).
- Dose estimates will be calculated based on personal dust monitoring results and area dust monitoring results using the following formula:

Dust Dose = average ∝dps/m^3 x DCF(μSv/∝dps) x exposure period in hours x 1.2 m^3/hr

where ∝dps = ∝ disintegrations per second; DCF = Dose Conversion Factor = 13.53 μSv/∝dps for 5μm AMAD dust particle size (from ICRP 137) and 1.2m^3/hr = assumed standard breathing rate

(see ARPANSA Amended RPS9 Tables – https://www.arpansa.gov.au/amended-tables-rps-9-and-rps-91)

- The workplace airborne radionuclide data will assist decisions about the need to use respiratory protection during work activities.

5.3 Radon Progeny Dose Monitoring

- Radon-222 gas is released during the uranium decay process. Radon-222 itself is short lived and relatively insignificant for dose estimation but decays to produce "radon progeny" or "radon daughters" which are ∝ emitters that can attach to lung tissue and cause significant local irradiation.
- Radon progeny exposure in well-ventilated outdoor environments is generally not significant but build up can occur in poorly ventilated areas such as core sheds if not properly constructed or in costeans during early morning calm periods.
- Limited radon daughter (radon progeny) monitoring may be carried out in a short campaign in areas of potential radon concentration to obtain indicative figures for local background and its variability. The sample results will potentially only be providing environmental baseline data and will to be interpreted as such.
- Radon daughter monitoring is performed by taking "grab" samples of air through a filter paper and then immediately assessing the radon daughter activity collected on it by carrying out a short period gross alpha count (utilizing the Borak Method).

5.4 Radiation Dose Ingestion Monitoring

- A Large Area Surface Alpha Contamination Probe is used to conduct monitoring for potential ingestion.
- Surface contamination monitoring may be conducted by the RSO to spot check workers hands for contamination.
- Tables, desks, chairs and other miscellaneous equipment will also be monitored from time to time as part of the monitoring program.
- The alpha probe is also used to test vehicles before they are given clearance to drive on public roads.

6 XRF DEVICES

- Handheld XRF devices shall be used in accordance with the handheld XRF procedure.
- XRF devices must be registered in SA for use by the owner of the apparatus, or in accordance with the SA Radiation Protection and Control regulations.
- XRF devices shall be inspected regularly for unintended radiation emissions, and to ensure interlocks are operating effectively. The inspection frequency is dependent on use, but at least 6 monthly inspections are recommended.

7 INTRODUCED SOURCES

Alligator Energy will, from time to time, engage contractors that utilize sealed radioactive sources (e.g. borehole loggers). The radioactive source mobilization checklist shall be used when a sealed source is to be used/stored at any Alligator Energy facility. All sealed radioactive sources shall be registered and source users must have an appropriate radioactive materials licence (or a licence recognized as acceptable under mutual recognition).

8 EMERGENCY PROCEDURES

In the event of an incident or emergency involving radioactive substances, implement control measures to minimise the exposure time of personnel to the source and maximise the distance of personnel from the potential source:

- Secure the area by means available.
- Move personnel to a safe distance from the spill or potential source of radiation.
- Notify the site supervisor and the Radiation Safety Officer.

9 NOTIFIABLE INCIDENTS

- Workers shall report incidents to their supervisor or manager via a written report (using internal safety reporting procedure is appropriate).
- Notifiable incidents must be reported to the SA EPA.

The following incidents are foreseeable for ionizing radiation sources at Alligator Energy:

- Stolen/missing XRF machine – orally report to regulator within 24h, written report within 7 days.
- Worker or member of public exceeding annual dose limits (via misuse of an XRF or radioactive sources) – orally report to regulator ASAP, written report within 7 days.
- Damage to XRF – orally reported to supervisor or manager ASAP, written report within 7 days.

Where radioactive materials may cause environmental damage (e.g. spill of unsealed radioactive materials to the environment), the regulator shall be notified orally immediately, with a written report within 7 days. Specialist advice will also be required.

10 SPECIALIST ADVICE

Alligator Energy has access to the following specialist advice when dealing with potential radiation incidents:

Daniel Emes
Radiation Consulting Australia
0439879737
Daniel.emes@radiationconsulting.com

11 TRAINING, RECORDING AND REPORTING

11.1 Worker Inductions and Training

- All employees and contractors are to receive general training in radiation safety and be aware of the risks of working with radioactive materials and steps which can be taken to minimise their exposure.
- Training will be initiated with a Radiation Safety Induction briefing shortly after arrival on site and will be issued with a Radiation Safety Manual.
- Records of inductions will be maintained together with a signed receipt for the Radiation Safety Manual.
- Additional radiation safety briefings will be given as the occasion arises, (e.g.) at toolbox meetings, to reinforce personal monitoring, dust control, spillage control, or site clearance control measures. All briefings and/or additional training will be recorded.
- Worker training will emphasise the importance of personal hygiene to minimise the risk of health issues.
- The Radiation Safety Officer(s) will maintain the currency of their qualifications and knowledge.

11.2 Recordkeeping

Records

Records are to be kept of the following information or events:

- The identity and qualification dates of Radiation Safety Officer and Assistant Radiation Safety Officers employed by the Company.
- Results of employees' personal dosimeter (OSL badge). These dose results are recorded and reported to the relevant workers on a regular basis.
- Calibration of radiation monitoring equipment.

Registers

A "register" is to be maintained in accordance with the S.A. Regulations for Radiation Protection and Control for each of the following:

- Radiation worker dose records.
- Radiation Area Monitoring.
- Incidents and notifiable incidents
- Apparatus, Sealed Sources, Unsealed Sources and Equipment.

These registers are maintained by the RSO and assistants.

12 GLOSSARY OF TERMS

Activity	The activity of a radionuclide is the number of disintegrations per second, or becquerels.
ALARA	*As low as reasonably achievable, economic and social factors being taken into account.*
Alpha radiation	A charged particle emitted from a disintegrating radionuclide consisting of two protons and two neutrons, i.e., a helium nucleus.
Appropriate authority	Means the statutory authority that is responsible for enforcing the provisions of the relevant Act and Regulations.
Becquerel (Bq)	The unit of measurement of radioactive decay defined as one radioactive disintegration per second.
Beta radiation	A charged particle emitted from a disintegrating radionuclide consisting of an electron or a positron.
Gamma radiation	A form of electromagnetic radiation, similar to light or X-rays, but originating as an emission from the nucleus of an atom
Gray (Gy)	The unit of absorbed dose. It is the quantity of energy from ionizing radiation that is imparted to a unit mass of matter such as tissue. One gray corresponds to one joule per kilogram.
Half-life	The time taken for the activity of a radioisotope to reduce by one half of its current activity.
ICRP	International Commission on Radiation Protection
Ionizing radiation	Radiation which interacts with matter to remove electrons from (i.e., to ionize) the atoms of the material absorbing it, producing electrically charged atoms called ions
Member of the public (for radiation purposes)	A person who is exposed only incidentally to radiation as a consequence of the use of radioactive material.
Radioactive	Spontaneously emitting radiation by nuclear transformation.
Radiation	Energy flux associated with electromagnetic (X-ray, gamma rays) or particles (alpha, beta and neutron) emissions.
Radionuclide	A nuclide of an atom that is radioactive.
Radioisotope	An isotope of an element which is radioactive.
Radon	The radioactive decay product of radium. It occurs as an inert gas. The radioisotope of radon in the 238U decay series is 222Rn which has a half-life of 3.8 days. The radioisotope of radon in the 232Th decay series is 220Rn which has a half-life of 55.6 seconds.
Secular equilibrium	When all the decay products in a radioactive decay series have the same activity.
Sievert (Sv)	The unit of measurement of radiation dose equivalent. One sievert is equal to the product of the absorbed dose by the quality factor and any modifying factor(s). It allows a comparison of the biological damage caused by different forms of radiation.
Specific activity	The activity of a unit mass of a radioactive substance, measured in Bq g-1.
232Th	The most abundant naturally occurring isotope of thorium.
238U	The most abundant naturally occurring isotope of uranium.

Appendix 3

Endorsement of BLU Exploration Radiation Management Plan

December 2023

Environment Protection Authority
GPO Box 2607 Adelaide SA 5001
T (08) 8204 2004
Country areas 1800 623 445

EPA R/51262

Mandy Slattery
Exploration & Development Compliance Support Officer
Alligator Energy Ltd
PO Box 338
Spring Hill QLD 4004

Dear Mandy

RE: Endorsement of Exploration Radiation Management Plan

I refer to your email of 17 November 2023 concerning the application for endorsement of an *exploration Radiation Management Plan for the Big Lake Uranium Project, Alligator Energy Limited* (undertaking exploration for uranium in the Cooper Basin region of South Australia).

The revised ERMP supplied to the EPA on 11 December 2023 is endorsed for the purposes of the *Radiation protection guidelines on mining in South Australia: Mineral exploration 2010* published by the EPA.

For further information on this matter, please contact me directly at hani.romana@sa.gov.au or 08 8463 7824.

Yours sincerely

Hani Romana
Scientific Officer, Authorised Officer
Mining and Radiation
ENVIRONMENT PROTECTION AUTHORITY

Date: 20 December 2023