Government of South Australia
Department for Energy and Mining

13 August 2024

Ms Amy Jacka
Tenement Manager
Copper Aura Pty Ltd and Iron Genesis Pty Ltd
107 Rundle Street
KENT TOWN SA 5067

amy.jacka@havilah-resources.com.au

Dear Ms Jacka,

**Approval Notification - Exploration Program for Environment Protection and Rehabilitation (EPEPR2021-018) Review EL5831, EL5848, EL5882, EL6163, EL6592, EL6656 and EL6657**

The program review for EL5831, EL5848, EL5882, EL6163, EL6592, EL6656 and EL6657 final version submitted on 8 August 2024 to conduct drill testing of anomalous copper, silver and cobalt in the Mutooroo Project Area is in the northeast pastoral region of South Australia close to the New South Wales border, has been approved in accordance with Section 70C of the *Mining Act, 1971 (the Act)*.

In accordance with section 70C(7a)(b) of the Act, the approved program is subject to the conditions listed in the attached notice.

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 EPEPR2021-018 is approved for the term of Exploration Licence(s): EL5831, EL5848, EL5882, EL6163, EL6592, EL6656 and EL6657.

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

If you require any further information, please contact Shelley Rasmussen 0409 797 670 or Simon Constable on 8429 2516 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

The Department's Regulatory Guidelines, Ministerial Determinations and Information Sheets are available at: https://www.energymining.sa.gov.au/industry/minerals-and-mining/forms-legislation-and-guidance

**Notice of Approval Conditions – EPEPR 2024-018**

In accordance with section 70C(7a)(b) of the Act, the approved program is subject to the following conditions:

1. Prior to conducting exploration operations a Program Notification must be submitted to the Department for Energy and Mining in accordance with the approved PEPR, 21 days prior to commencement of operations. Forward all Program Notifications to Mineral Exploration Branch – Attn: Exploration Regulation, email: DEM.exploration@sa.gov.au

**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 an ongoing period 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 to 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 | **Ongoing approval period.**<br>**A program notification is required to be provided to DEM 21 days prior to the start date of each new program of works (PEPR program notification template is available from the DEM Minerals website). All rehabilitation is to be completed within 3 months after the expiry of each program notification.** |
| Tenement details | EL5831, EL5848, EL5882, EL6163, EL6592, EL6656, and EL6657. |
| Tenement holder(s) (for each tenement) | Copper Aura Pty Ltd. – EL5831, EL5882, EL6163, EL6592, EL6656, and EL6657.<br>Iron Genesis Pty Ltd – EL5848. |
| Operating company | Havilah Resources Limited (Copper Aura Pty Ltd and Iron Genesis Pty Ltd 100% owned subsidiaries of Havilah).<br>PO BOX 3<br>Fullarton SA 5063 |
| Agency agreement (if applicable) | N/A |
| PEPR prepared by | Amy Jacka, Havilah Resources Limited, Senior Geologist,<br>amy.jacka@havilah-resources.com.au, 0438 822 771 |
| Project supervisor/contact person(s) | Tim Birt, Havilah Resources Limited, Senior Exploration Geologist<br>tim.birt@havilah-resources.com.au, 0404 222 862,<br>BSc (Hons) in Geology and Geophysics. Over 25 years' experience in mineral exploration and development. |
| Project/prospect name | Mutooroo Project Area (MPA). |
| Location details | The Mutooroo Project Area is in the North East Pastoral Region of South Australia close to the New South Wales border. Geologically the project is in the Curnamona Province. The project is located on the Olary SH54-02 1:250,000 mapsheet and Mingary 7033 1:100,000 mapsheet.<br>The MPA is situated on Mutooroo, Pine Creek and Tepco Stations, currently used for sheep grazing (**Map 1**). |
| Project description, commodity type and mineralisation model | Proposal to drill test areas anomalous Cu-Au-Co mineralisation located by previous drilling or exploration activities in the area (**Map 2 and 3**).<br>Note* This ongoing PEPR review (for EPEPR 2021-018) has been undertaken due to the depth restriction noted in the previous version, which did not allow for deeper RC or diamond drilling. |

## 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 | Amy Lockheed<br>(Copper Aura Pty Ltd) | Signature (digital allowed) |  |
| Position | Senior Geologist | Date | 08 August 2024 |

| | | | |
|---|---|---|---|
| Name | Amy Lockheed<br>(Iron Genesis Pty Ltd) | Signature (digital allowed) |  |
| Position | Senior Geologist | Date | 08 August 2024 |

*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.

Drill hole locations are planned following extensive collation and interpretation of existing data (both historical from previous companies and from Havilah's ongoing regional exploration) in combination with the enormous local geological knowledge which that Havilah geologists, who have been working in the area for many years, have. The initial drilling targets are in close proximity to the historical Mutooroo Mines and West Mutooroo and Cockburn Prospects. Ongoing dialogue with landowners is occurring. Notices of Entry and Notices of Declared Equipment have been issued and updated Form 21Bs have be served to both landowners and native title claimants.. A cultural heritage survey has been completed at the Mutooroo Mines and West Mutooroo and Cockburn Prospects.

### 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 |
|---|---|---|---|---|---|---|---|---|
| EL5848, EL5882, EL6592, EL6656, and EL6657. | Mutooroo Pastoral Company Pty Ltd; Mutooroo Station | Crown Lease CL 1298/29 | Grazing | Form 21B 20/05/2021 | N/A | Havilah does not plan to drill within 150m of any dams. Exemptions will not be required. | Havilah Field Personnel are in regular contact by phone and in person with the Station Manager discussing plans and movements. | Vehicle movement around Stock – Havilah personnel to slow vehicle speed to walking pace when near stock. |
| EL6656, EL5848, and EL6592 | Rohan and Julie Rogers; Pine Creek Station | Crown Lease CL 6174/60 CL 6174/61 CL 6174/62 CL 6174/63 CL 6174/64 CL 6174/66 | Grazing | Form 21B 20/05/2021 | N/A | Havilah does not plan to drill within 150m of any dams. Exemptions will not be required. | Havilah Field Personnel are in regular contact by phone and in person with the Station Owner discussing plans and movements. | Vehicle movement around Stock – Havilah personnel to slow vehicle speed to walking pace when near stock. |
| EL6656, EL5848, EL5882, EL6592, | Christopher and Joanna Abell; Tepco Station | Crown Lease CL6186/330 | Grazing | Form 21B 25/05/2021 | N/A | Havilah does not plan to drill within 150m of any dams. Exemptions will not be required. | Havilah Field Personnel are in regular contact by phone and in person with the Station Owner discussing plans and movements | Onion Weed – Havilah personnel to wash vehicles prior to entry. |
| EL6656, EL5848, EL5882, and EL6592 | Minister for Environment and Water | Crown Record CR5748/5, CR5748/6, | Vacant Land previously set aside for | Form 21B 24/05/2021 | N/A | N/A | | |

**Exploration PEPR application – ongoing**

| 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 |
|---|---|---|---|---|---|---|---|---|
| | | CR5764/626 | Saltash Township | | | | | |
| EL6656, EL5848, EL5882, and EL6592 | Wilyakali (SC2012/001) | Native Title Claim | | Form 21 & 22<br>16/04/2018<br>Form 21<br>28/11/2018<br>Form 21B<br>25/05/2021 | N/A | N/A | | |

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.

Consultation carried out as follows:

- Serving of NOE and NODE and re-issue of Form 21B to the owners of both the pastoral blocks and the native titles claimants (**Completed**)
- Liaise with the manager of Mutooroo Station (Adam and Kirsty Lomman), owners of Pine Creek Station (Rohan and Julie Rogers) and owners of Tepco Station (Christopher and Joanna Abell) regarding the timing and location of the planned drilling (**Completed and ongoing**)
- Submit a request for heritage clearance of the drill sites to the Wilyakali Native Title Claimants via representative Lawyer (**Completed**)
- Liaise with representative Lawyer and Anthropologist to determine a suitable time to conduct Aboriginal Cultural Heritage Survey (**Completed**)
- Aboriginal Cultural Heritage Survey and clearance with the Wilyakali Native Title Claimants (**Completed**)
- Additional stakeholder liaison and Heritage Clearance Surveys to be conducted at other proposed prospects (**Ongoing**)

## 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.

The proposed exploration program will be conducted mostly on Mutooroo Station, owned by Mutooroo Pastoral Co Pty Ltd and managed by Adam and Kirsty Lomman with minor planned work on Pine Creek Station owned and managed by Rohan and Julie Rogers. The closest township is Cockburn to the north of the MPA and the closest occupied dwellings are Pine Creek homestead 8 km to the north, and Mutooroo homestead 21 km to the south of proposed drill targets (**Map 1**). No infrastructure will be affected by drilling. The project is located on the Olary SH54-02 1:250,000 mapsheet and Mingary 7033 1:100,000 mapsheet.

### 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 | ☐ |
| | |
| *European heritage sites | ☐ |
| | |
| *Other (e.g. historic mining) | |
| | |

* 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.

| |
|---|
| N/A |

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

| |
|---|
| N/A |

Provide any additional relevant information.

| |
|---|
| N/A |

## 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. | | | | | |
| | | | | | |

## 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 ☒ |
| | | |
| 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.<br><br>Describe the results of consultation and how any concerns raised were addressed. | | |
| | | |

## 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 ☐ | Wilyakali No. 1<br>SC 2012/001<br>SAD 33/12 | 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?*<br>Yes ☒ No ☐ | EL6656, EL6592, MC3565 & MC3566.<br>*Native Title Mining Agreement for Exploration*.<br>Incident: 329 Registered: 4/08/2014 |
| | | Is the agreement registered?*<br>Yes ☒ No ☐ | EL5848<br>*Native Title Mining Agreement for Exploration*.<br>Incident: 317, Registered 15/01/2014 |
| | | Is the agreement registered?*<br>Yes ☒ No ☐ | EL5882<br>*Native Title Mining Agreement for Exploration.*<br>Incident: 421 Registered: 10/10/2018 |
| Have you accepted an Indigenous land use agreement (ILUA)? | Yes ☐ No ☒ | Is the ILUA registered?*<br>Yes ☐ No ☐ | |
| Have you obtained ERD Court determination?† | Yes ☐ No ☒ | Is the determination registered?*<br>Yes ☐ No ☐ | |

* 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.

N/A

## 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.).

The MPA lies adjacent to the Barrier Ranges, in a broad regional zone categorised by the Natural Resources Management of South Australia as the “SA Arid Lands”. The NE-SW trending Barrier Ranges fuse into the Flinders Ranges to the south and together form part of the Adelaide Fold Belt. The Barrier Ranges separate the Lake Eyre Basin to the north from the Murray Basin to the south, with intramontane plains in-between. The project area can be described as an extensive sand plain, with low hill of folded metasediments and granite, with small flood plains. The plains are generally flat and are often featureless. Relief in the area ranges from 200 to 270 m with Pinery Hill being the highest point proximal to the project area at 273 m. The area is devoid of both limestone and caves.

## 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.

The area consists of mainly sandy-clay plains with low scrubland vegetation. The Mutooroo Project Area is located within the IBRA Barrier Range sub-region of the Broken Hill Complex Bioregion. It has been assigned a climate zone of E6: Semi-arid climate that is too dry to support field crops. Soil moisture tends to be greatest in winter. Three soil types are present within the immediate project area.

1. **Soil type 1: Alluvial sands and silts around watercourses (0.1-1 m)**
   Occurring on alluvial material near drainages. These soils are overlain in part by aeolian sands. Nutrient levels would be expected to be slightly higher in these soils as more vegetation occurs in and around them),

2. **Soil type 2: Skeletal soils on exposed bedrock areas (1-2 m)**
   Composed of alluvial sands and silts. Although these ‘soils’ are host to a relatively denser vegetation, this is most likely due to both their proximity to waterways with their inherent higher moisture levels and the underlying red-brown soils.

3. **Soil type 3: Red-brown soils covered in places by aeolian sands (0.01-0.05 m)**
   These soils host little or no vegetation as there is no organic content or depth. Establishment of root structure is therefore not possible, nor are nutrients maintained for vegetative use.

Old workings from mining in the late 19th and early 20th century have left a legacy of soil degradation in some areas that can only be restored by an active rehabilitation program. The activities of feral animals (goats and rabbits), native fauna (kangaroos and emus) and grazing by sheep and cattle has led to some soils becoming exposed, resulting in the generation of dust in periods of strong winds especially during drought conditions.

## Surface water

| | | |
|---|---|---|
| Will the proposed program interfere with surface water bodies and natural drainage (e.g. drainage lines, creeks, floodplains, wetlands)?<br>If yes, describe the potential interference and surface water bodies and natural drainage on maps. If no, indicate why. | Yes ☐ | No ☒ |
| All drainage lines, creeks, floodplains, wetlands are assigned a 50 m avoidance buffer. As part of the heritage clearance process, a 50 m avoidance from the edges of all watercourses, washouts and creek lines throughout all survey areas is a condition. The clearances are subject also to creeks and drainage line crossings may be necessary in some areas to gain access to a work site and in such circumstances access tracks be kept to a single defined track. | | |
| Is the program area located within water protection areas defined under the *River Murray Act 2003*?<br>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?<br>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.<br>If no, provide evidence or any supporting information demonstrating this. | Yes ☒ | No ☐ |
| | | |

**Description of the locality/area where different groundwater conditions may be encountered**

The region is notable for its lack of groundwater, which is typically saline (TDS ranging from 12,000 to 33,000 mg/ L) and not suitable for stock watering purposes. Over most of the area Willyama Supergroup rocks subcrop with a thin veneer of skeletal soil or transported sands and silts only found in some low-lying areas. A groundwater investigation carried out at Mutooroo mining lease area by Aldam Geoscience (2008 – 10) reported groundwater standing water levels between 23 to 35 m ( below surface (217 to 220 m AHD) in the bedrock, with generally low flow rates due to the low transmissivities of the Willyama Supergroup schists, gneisses and amphibolite country rocks. This is supported by Havilah's extensive exploration drilling in the region, where most drillholes are either dry or have insignificant groundwater flows.

*There are no known aquifers in the area, but if present it would be classed as unconfined fractured bedrock as crystalline basement rocks are exposed at the surface.

| 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 |
|---|---|---|---|---|---|
| Willyama Supergroup | Quaternary: 0-4 m (often not present)<br>Basement: 4 m+ (typically subcrops) | No known Aquifer | Unknown | Unconfined* | Limited groundwater in basement rocks, salinity is high with a neutral-slightly acidic pH. SWL 20-35 m. |

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

From hydrological investigations undertaken by Havilah it has been determined the groundwater is highly saline and the average TDS from six separate water testing bores drilled by Havilah at Mutooroo is 23,300 mg/l, dominated by Na and Cl, with lesser K, Ca and sulphate. From Havilah's regional exploration drilling experience and the paucity of active stock water bores this appears to be typical of the surrounding area. There are no obvious environmental values because the salinity generally precludes use of the groundwater for stock or other primary industry pursuits. It could possibly be used for mineral processing, but quantities are too low for commercial use. In severe droughts when dam water supplies are running low it may be possible to shandy the saline groundwater with the fresh water. Possible environmental values may therefore be: Primary industries —livestock drinking water, Primary industries —aquaculture and human consumption of aquatic foods.

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

Mingary and Pine Creek have low potential Aquatic and Terrestrial GDE's (**Photo 1**) due to the absence of permanent fresh water. with no Subterranean GDE's analysed in the area. Similar comments apply to all other ephemeral creeks in project area including Blackfellows Creek? – **Photo 1**. **Map 1 and 2** shows the proposed drill areas of the Mutooroo Project. Access to all drilling areas will be along already established station tracks thereby minimising potential disturbance should any GDEs exist. All central drill areas (Mutooroo, Mingary, etc.) are not located near any potential GDE's.

| Is the proposed program located within a prescribed wells area or prescribed water resource area?<br>If yes, provide the name of the area. | Yes ☐ | No ☒ |
|---|---|---|
| N/A | | |

Provide any additional information, if required.

N/A

## Native vegetation

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

The Mutooroo Project Area has typical low-lying chenopod shrubland consisting of sparse saltbush or bluebush and lesser tall shrub lands that occur along watercourses. It also includes some low sand dunes with tall shrubland or woodland vegetation. Native Vegetation in the area shows evidence of being disturbed, degraded and severely degraded due to a long history of grazing by native, domestic and introduced herbivores. Regeneration will occur, especially after year of above average rainfall, and further enhancement by stock removal and rabbit control.

Badman Environmental and Kellogg Brown and Root Pty Ltd (KBR) were contracted by Havilah Resources in 2007 and 2011 respectively to assess the Mutooroo Project Area. It was noted that the region experienced above average rainfall over 2010/11 which is the primarily reason for the presence of so many annual species, which during a normal rainfall year may not have been found.

The most recent KBR Survey found that Native Vegetation, based on dominant flora species, habit and topography fall into seven categories:

1. **Vegetation Group 1: Black oak low woodland with low Chenopod shrubland understorey, dominated by non-palatable species indicating an impact from grazing pressure. Vegetation was close to a creek line, with minor rocky expressions.**

   Species include:

   - *Austrostipa scabra* (Spear-grasses)
   - *Maireana aphylla* (Cotton Bush)
   - *Enchylaena tomentose* (Ruby Saltbush)
   - *Sclerolaena lanicuspis* (Woolly Copperburr)
   - *Sclerolaena obliquicuspis* (Limestone Copperburr)
   - *Dissocarpus paradoxus* (Ball Bindyi)
   - *Casuarina pauper* (Black Oak)

*Figure 1: Group 1 typical vegetation*

2. **Vegetation Group 2: Mixed low chenopod shrubland dominated by bluebush, with degraded and scattered black oak individuals. Evidence of grazing pasture pressure on palatable species, and the dominance of non-palatable species (e.g. bindyi species) indicate that vegetation was dehydrated.**

   Species include:

   - *Austrostipa scabra* (Spear-grasses)
   - *Austrodanthonia spp* (Wallaby-grasses)
   - *E. nigricans* (Black Heads)
   - *Casuarina pauper* (Black Oak)
   - *Maireana astrotricha* (Low Bluebush)
   - *Maireana sedifolia* (Pearl Bluebush)
   - *Sclerolaena diacantha* (Grey Copperburr)
   - *Sclerolaena lanicuspis* (Woolly Copperburr)
   - *Sclerolaena obliquicuspis* (Limestone Copperburr)
   - *Enneapogon avenaceus* (Common Bottle-washers)

*Figure 2: Group 2 typical vegetation*

3. **Vegetation Group 3: Low chenopod shrubland with bindyi (copperburr) species and spear-grasses. Occasional scattered sugarwood and black oak individuals. Grazing pasture in this locality has stunted growth of bladder saltbush and caused the woolly copperburr to deteriorate.**

   Species include:

   - *Austrostipa scabra* (Spear-grasses)
   - *Atriplex vesicaria* (Bladder Saltbush)
   - *Sclerolaena lanicuspis* (Woolly Copperburr)
   - *Sclerolaena spp* (Bindyi or Copperburr Species)
   - *Casuarina pauper* (Black Oak)
   - *Myoporum platycarpum* (Sugar Wood)

*Figure 3: Group 3 typical vegetation*

4. **Vegetation Group 4: Black bluebush low chenopod shrubland, on creek line and floodplain area.**

   Species include:

   - *Austrostipa scabra* (Spear-grasses)
   - *Maireana aphylla* (Cotton Bush)
   - *Sclerolaena lanicuspis* (Woolly Copperburr)
   - *Sclerolaena obliquicuspis* (Limestone Copperburr)
   - *Asphodelus fistulosus* (Onion Weed)
   - *Swainsona Formosa* (Sturt's Desert Pea)
   - *Myoporum platycarpum* (Sugar Wood)

*Figure 4: Group 4 typical vegetation*

5. **Vegetation Group 5: Pearl bluebush and low bluebush, low chenopod shrubland with limestone copperburr, occurring with some surface rock expression.**

   Species include:

   - *Austrostipa scabra* (Spear-grasses)
   - *Maireana sedifolia* (Pearl Bluebush)
   - *Maireana astrotricha* (Low Bluebush)
   - *Maireana pyramidata* (Black Bluebush)
   - *Eremophila sturtii* (Turpentine Bush)
   - *Sclerolaena obliquicuspis* (Limestone Copperburr)
   - *Enneapogon avenaceus* (Common Bottle-washers)

*Figure 5: Group 5 typical vegetation*

6. **Vegetation Group 6: Mixed low chenopod shrubland dominated by black bluebush and spiny saltbush, and native grasses occurred on clay and lime soil on a drainage line. Woolly copperburr in the region was either dead or dying.**

   Species include:

   - *Maireana astrotricha* (Low Bluebush)
   - *Maireana sedifolia* (Pearl Bluebush)
   - *Maireana pyramidata* (Black Bluebush)
   - *Rhagodia spinescens* (Spiny Saltbush)
   - *Sclerolaena lanicuspis* (Woolly Copperburr)
   - *Sclerolaena spp* (Bindyi or Copperburr Species)
   - *Sida intricata* (Twiggy Sida)
   - *S. fibulifera* (Pin Sida)

*Figure 6: Group 6 typical vegetation*

7. **Vegetation Group 7: Grassland with low chenopod shrubland, dominated by copperburr species on limey soil. Degrading vegetation conditions were apparent because of grazing. Rabbit warrens were frequent in this area.**

   Species include:

   - *Austrostipa scabra* (Spear-grasses)
   - *Austrostipa nitida* (Balcarra Grass)
   - *Maireana pyramidata* (Black Bluebush)
   - *Atriplex vesicaria* (Bladder Saltbush)
   - *Sclerolaena lanicuspis* (Woolly Copperburr)
   - *Sclerolaena obliquicuspis* (Limestone Copperburr)
   - *Vittadinia cuneata* (Fuzzweed)

*Figure 7: Group 7 typical vegetation*

## 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† |
|---|---|---|---|
| *Acacia Carneorum* | Purple-wood Wattle | Vulnerable | Vulnerable |

The purple-wood wattle was recorded at two locations in the survey conducted by Badman Environmental (**Figure 8**) however was not recorded in the 2011 survey by KBR. The occurrence of the Purple-wooded wattle at each site is not common, with only a few plants being recorded. These locations, are outside of the proposed target areas and will be avoided.

*Figure 8: Purple-wood Wattle*

* *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*).

No crops or other introduced species have ever been planted in this area. Minimal impact from weed species occurs at the project site.

Prospect locations are within the Buffel Grass (**Figure 9**) Management Zone 2 (Contain Spread) however there are no known occurrences of Buffel Grass within the project area. Should an area of Buffel Grass infestation be encountered during the drilling program, cleaning procedures will be implemented when leaving the area of infestation and the area avoided.

*Figure 9: Buffel Grass*

## Fauna

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

The diversity of mammal species in the Mutooroo Project Area is moderate with relatively common species. In surveys conducted by KBR (2011) four introduced, two native dunnart and two native rodent species were observed. All mammals in the survey are widespread in the region. *Falco Peregrinus (*Peregrine Falcon) was the only fauna of conservational significance recorded in the Mutooroo Project Area. All fauna species recorded in the region during surveys are considered common for the region.

## 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 |
|---|---|---|---|
| *Falco Peregrinus* | Peregrine Falcon | Rare | Rare |

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 ☒ |
| N/A | | |
| 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 Clearance Survey was conducted with representatives of the Wilyakali People and an Anthropologist from the 8th to 9th June 2019. This survey cleared/partially cleared 6 dill traverses at West Mutooroo (formerly Scorpion). Another Aboriginal Heritage Clearance Survey was conducted with representatives of the Wilyakali People and an Anthropologist from the 20th to 23rd April 2021. This survey cleared multiple dill traverses at Mutooroo Mines and Allansons (Viper). Minotaur Exploration had previously undertaken an Aboriginal Heritage Clearance Survey over the Allansons area in 2012. | | |

## SECTION D– DESCRIPTION OF PROPOSED EXPLORATION OPERATIONS

Include a description of the proposed operations. Each of the elements listed in below must be described only to the extent that they apply to the proposed exploration program.

## Exploration scope

Describe the scope of the proposed exploration operations and detailing the following:

- all exploration methods to be covered by the PEPR.
- extent of exploration operations – e.g. drillhole spacing and drill line density.
- geographic extent of the area covered by the PEPR, including a general locality plan with tenement details, landowner boundaries and areas with environmental classifications or sensitivities.
- specific environments where exploration operations will not be conducted – e.g. parks, reserves, salt lakes etc.

## Equipment and personnel requirements

Describe the maximum composition of field crews (operator, contractors, and geologists) and proposed working hours/days for each type of activity.

| Type of personnel | Number | Name of contractor company (if applicable) |
|---|---|---|
| Geologists | 3 | Havilah Resources Limited (Havilah) and/or contractor |
| Field assistants/technicians | 3 | Havilah, and/or contractor |
| Drilling crew | 4 | Havilah and/or contractor |
| Site preparation and rehabilitation | 2 | Havilah, contractor and/or Landowner |

| Shifts worked per day | Hours worked per day | Days worked per week |
|---|---|---|
| Two | Dawn to Dusk for single shift<br>24h for double shift | 7 |

Using the table below, describe the equipment (size, number and contractor details) required to conduct the proposed operations.

| Equipment type | Owner/operator | Description/capacity | Activity/purpose |
|---|---|---|---|
| **Diamond Drilling** | | | |
| Multi-purpose or Diamond Drill Rig | Drilling Contractor | UDR 1000 or similar | Drilling |
| Compressor/rod Trucks | Drilling Contractor | 2 x 6- or 8-wheel flat bed | Drilling support vehicles |
| Drill support vehicles | Drilling Contractor | Light truck - Mitsubishi Canter or similar | Site travel and equipment transport |
| Water Truck | Contractor | 1 x 8 wheel 20,000L or similar | To supply drilling water, only when too far to pipe eg >3km. |
| Backhoe | Havilah | CAT or JCB Backhoe | Site Preparation (including digging of Sumps) & Rehabilitation |
| Skid steer | Havilah | Bobcat or similar | Rehabilitation and site preparation |
| 4 x 4WD Utilities | Havilah, Drilling Contractor | Landcruiser or Hilux dual cab utes or similar | Field crew vehicles for access, sampling & logging. In addition to transportation for drilling crew to and from the site. |
| **Reverse Circulation Drilling** | | | |
| Drilling Rig | Havilah and/or contractor | Almet Masters (Havilah) or other RC drill Rig (contractor) | Drilling |
| Compressor/rod Truck | Havilah and/or contractor | 2 x 8-wheel flatbed with compressor & booster. | Drilling support vehicle |
| Drill support vehicles | Havilah and/or Drilling Contractor | Light truck - Mitsubishi Canter or similar | Site travel and equipment transport |
| Backhoe | Havilah | CAT or JCB Backhoe | Site Preparation (including digging of Sumps) & Rehabilitation |
| Skid steer | Havilah | Bobcat or similar | Rehabilitation and site preparation |
| 4 x 4WD Utilities | Havilah and/or contractor | Landcruiser or Hilux dual cab utes or similar | Field crew vehicles for access, sampling & logging. In addition to transportation for drilling crew to and from the site. |
| **Aircore Drilling** | | | |
| Drilling Rig | Havilah | Almet Masters | Drilling |
| Backhoe | Havilah | CAT or JCB Backhoe | Site Preparation & Rehabilitation |
| 3 x 4WD Utilities | Havilah | Landcruiser or Hilux dual cab utes. | Field crew vehicles for transportation, sampling & logging. |

## 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 ☐ |
|---|---|---|
| Geophysics such as magnetics, gravity, MT, and electrical geophysical surveys, and surface geochemical sampling – low impact surveys are conducted with LVs and on foot. Each survey type generally requires a small amount of equipment (e.g. gravimeter – gravity survey) which are carried within the exploration vehicle. Survey size will depend on the type of survey and the detail of information required. | | |

## Drilling Operations

Will exploration drilling activities be conducted? If yes, identify all the drilling methods that may be used. Yes ☒ No ☐

| AC | RAB | RM | RC | DD | AC/DD | RAB/DD | RM/DD | RC/DD | Vibracore | Auger | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ☒ | ☒ | ☒ | ☒ | ☒ | ☒ | ☒ | ☒ | ☒ | ☐ | ☒ | ☐ |

AC = aircore, RAB = rotary air blast, RM = rotary mud, RC = reverse circulation, DD = diamond drilling, AC/DD = aircore with diamond tails, RAB/DD = rotary air blast with diamond tails, RM/DD= rotary mud with diamond tails, RC/DD = reverse circulation with diamond tails.

Where 'Other' drilling method is selected, provide a description of the drilling method.

N/A

## 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.

- Drill sites are located on existing tracks or open areas to minimise ground and vegetation disturbance, wherever possible.
- Vehicles to be restricted to existing/cleared overland access routes and the cleared drill pad, to minimise ground and vegetation disturbance.
- Ground cover clearing or minor levelling is normally done by hand (rakes & shovels)
- Clearing will always be of a minimal nature to reduce environmental impact and lessen the requirement for extensive rehabilitation.
- All sumps are to have a ramp, to enable animals to escape, should they happen to fall in.
- Sumps will be fenced if stock are at risk, and they may be bunted for safety.
- Topsoil and subsoil dug up is stockpiled separately.
- Up to 30 m x 30 m (900 $m^2$) drill pad area required.
- 1-2 sumps for RC Drilling outside return 3m L x 3m W x 2m D.
- 1-2 sumps for Diamond Drilling water requirements 5m L x 3m W x 2m D.
- For RC drilling the existing sumps are normally used for disposal of excess samples but where this is not possible, a third sump (3m x 1m x 1m) may be required in some cases.

## 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.

**Aircore holes will be constructed as follows:**
Aircore holes will have a short (0.5m) length of PVC casing at the surface. The hole is then drilled to depth using a blade bit.

**Reverse Circulation holes will be constructed as follows:**
Reverse circulation holes will be collared and cased with 6" PVC to varying depths (generally <36m) depending on the depth of poorly consolidated material. The casing is grouted at the base with cement or gypset, then cemented in with polyurethane foam (Sifoam) down the outside of the casing. The hole is then drilled to depth using a ~5 1/2" hammer.

**Diamond holes will be constructed as follows:**

Rotary mud (RM) or Aircore (AC) or Reverse Circulation (RC) precollar through Quaternary sands & clay, saprolite and fresh rock to the desired depth. PVC casing through the unconsolidated cover will be required. HQ/NQ size diamond coring from the base of the precollar through the target zone.

**Hole Depth:**

As depth requirements continually change with geological understanding and theories, vary between prospects and targets, and change depending on visual results from each hole in a program, it is not possible to give a definitive maximum hole depth. However, it is not expected that any hole would realistically be drilled beyond 800-1000m depth.

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.

Previous exploration drilling experience in the region shows that limited groundwater may occur in the Proterozoic basement rocks, with standing water level between 23 and 35 m below ground surface.

The dense and tight nature of the rocks means the formation groundwater transmissivity is typically low and water quality is saline. Proposed drilling is targeting known mineralisation within the Proterozoic basement rocks and based on experience there is negligible possibility of intersecting confined aquifers or multiple water bearing zones. Havilah's geologists are in the habit of logging and recording any abnormal groundwater flows when drilling and will be aware if groundwater conditions differ from the norm for this area as described above.

Drillhole decommissioning according to Havilah's standard procedure in the region will include:

- Cutting and capping any protruding PVC casing roughly 50 cm below the surface and covering with topsoil.
- Depositing of drill cutting spoil and all remaining drilling samples into a sump (normally the same sump as for the drilling outside return).
- Light raking or scarifying to level the drill pad and leaving shallow furrows to promote seed and water retention and seed germination after rain.

Buried rehabilitated collars may be marked by a short length of 13mm flexible black polypipe attached to the cap/plug and protruding from the ground, with a small, stamped aluminium tag attached to allow relocation if required at some future date.

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

## Costeans and bulk sample disposal pits

| Will costeans/bulk sample disposal pits be required for the proposed program? If yes, indicate the maximum dimensions and size of pits and costeans. | Yes ☒ | No ☐ |
|---|---|---|

The costean would be dug with our backhoe and be about 600-800 mm wide and whatever length required for bedrock exposure and sampling purposes.

For bulk sampling or sample disposal purposes the trench would be dug with a backhoe and be about 2 m wide.

In all cases the costeans would have sloping ends to allow animals to escape. They would be backfilled as soon as practicable to minimise the safety hazard, with the topsoil replaced on top to promote regeneration. It is our experience that vegetation tends to regenerate quite well over costeans due to the broken ground and better water retention properties after heavy rains.

Describe site preparation methods, vegetation clearance, and safety and maintenance requirements if pits and costeans are required.

## 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).

- A small area (5 m x 15 m) within each site will be reserved for samples.
- Rotary mud precollar samples (2m, 3-5kg each) of drill cuttings will be laid out as small piles in rows on the ground. These will be disposed of firstly down the drill hole and then in either a small trench or sump during the partial rehab of the site, shortly after drilling has been completed.
- RC or AC Drill samples are collected through a cyclone/dust suppression unit with attached cone or riffle splitter. Bulk sample portion is collected in 20-30L buckets then laid out in rows on the ground adjacent to the drill rig. Assay samples are collected from the splitter in 10"x 14" calico bags which are put in polyweave sacks (gen 5 per sack), for transport to the assay lab.
- Bulk sample portion weights vary between ~15 to 40 kg, and assay samples from ~1 to 3 kg, depending on the nature of the material being drilled and sample quality coming to surface.
- A geologist will sieve and log each sample and collect representative cuttings in 20 compartment plastic chip trays.
- The RC or AC samples will be retained at each site until all assaying and any resampling has been completed, at which time the material will be disposed of into the sumps or pit dug at each site.
- Diamond core will be removed and processed offsite at Havilah camps (Cockburn or Kalkaroo).
- There will be no need to store bulk sample or samples in a pit or bag farm. No sample material will remain on the surface. All rubbish will be removed and disposed of appropriately.
- All drilling, sampling and rehabilitation activities will be conducted under company safety and environmental protocols, to minimise risks to personnel, wildlife and the environment that might be associated with sumps, pits, sampling, and rehabilitation.

## Access routes to work areas

| | | |
|---|---|---|
| Will existing tracks require upgrading and/or maintenance?<br>If yes, detail the work required to upgrade/maintain existing tracks. | Yes ☐ | No ☒ |
| Main access tracks on the Pastoral stations are maintained by the stations (graded). During any drill programs, Havilah will maintain main station access tracks by mutual agreement with station owners. | | |
| Will access off existing tracks be required? If yes, detail the method(s) for gaining access and if vegetation clearance is required. Details of 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) must be provided in the program notification. | Yes ☒ | No ☐ |
| Much of the area within the included tenements is flat and sandy or rocky and the vegetation consists of bluebush and saltbush, with very minor patches of acacia shrubs and rare sheoak or black oak, allowing for most track access to drilling sites to be across country with no construction or earthworks required. Several strategies to minimise impacts of creating new overland access routes (vehicle movement or equipment used) include:<br>• The most direct and clearest route to the site will be taken to minimise impact to the environment.<br>• All larger vegetation and trees will be avoided.<br>• Access route will be checked and marked out (LV or on foot, during heritage surveys).<br>• Backhoe raised bucket (blade ~0.3m above ground) may be used in very rare instances where the terrain is too rough. This method minimises disturbance to rootstock and topsoil.<br>• Natural drainage lines will not be blocked.<br>• Creating windrows avoided.<br>• Use interdune corridors for access as much as possible to avoid traversing over dune crest.<br>• Dune crossing locations will be selected across low-dunes and at right angles, and to minimise impact on soil and vegetation.<br>*Note that nearly all this access and drill line track is for one-off or single pass access for the drilling rig and LVs and has no prior backhoe or grader clearance. Disturbance is minimal and normally no backhoe rehabilitation is required (and is avoided except in rare circumstances as it would result in more disturbance than the vehicle access). | | |

Where possible, 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

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. | | |
| The township facilities at Cockburn will be utilised for all accommodation of staff and contractors and as a site of consumables store and logistical base of operations. Cockburn is situated on the Barrier Highway, 5 hours by road to Adelaide and ½ an hour to Broken Hill. | | |
| What is the maximum number of personnel requiring accommodation? | 4 – 8 | |
| 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. | | |
| | | |
| What will be the total area (ha) of the campsite(s)? | | |
| What will be the total area (ha) of vegetation clearance for the campsite? | | |
| If vegetation clearance is required, describe the methods used to prepare the site. | | |
| | | |
| Will any excavations be required?<br>If yes, describe the purpose of the excavation and the maximum volume ($m^3$) of material to be excavated. | Yes ☐ | No ☐ |
| | | |
| 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 ☐ |

| **Proposed infrastructure (includes caravans, tents, offices, hydrocarbon and water storage requirements etc)** | **Quantity** | **Description/capacity** |
|---|---|---|
| | | |

| **Laydown area details** | | |
|---|---|---|
| Will laydown areas be required? If no, no further information is required.<br>Equipment and consumables are normally brought in from the main storage area at the Cockburn camp to support exploration drilling campaigns. Larger and longer-term resource drilling programs (including diamond drilling) will likely require a small laydown area for non-hazardous consumable items (e.g., PVC casing, drilling muds in containers). Open areas that do not require clearance of vegetation and usually adjacent to tracks will be chosen, as for example at Mutooroo, where a temporary laydown area is used that required no vegetation removal and minimal ground disturbance. | Yes ☒ | No ☐ |
| Will the laydown area(s) be located at the same location as the campsite? | Yes ☐ | No ☒ |
| What will be the maximum area (ha) required for the laydown area(s)? | 0.25ha | |
| What will be the total area (ha) of vegetation clearance for the site? | 0ha | |
| If vegetation clearance is required, describe the methods used to prepare the site. | | |
| | | |
| Will any excavations be required? If yes, describe the purpose of the excavation and volume ($m^3$) of material to be excavated. | Yes ☐ | No ☒ |

| **Proposed infrastructure (includes hydrocarbon and water storage requirements)** | **Quantity** | **Description/capacity** |
|---|---|---|
| Transportable waste management solution | 1 | Skip Bin 8-15$m^3$ |
| Water Tank | 2 | 20-30KL Poly water tank |
| Sea Container | 2 | Storage of drilling supplies |

## Other exploration methods and/or ancillary operations

| | | |
|---|---|---|
| Are any other proposed exploration methods (e.g. seismic) and/or ancillary exploration operations required?<br>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?<br>If yes, describe how and where water will be sourced for drilling, track maintenance and camping purposes (e.g. groundwater, surface water, mains). Indicate how wastewater and/or runoff water will be managed. | Yes ☒ | No ☐ |
| **Aircore Drilling:**<br>No drilling water required.<br><br>**Reverse Circulation Drilling:**<br>Minor water for dust suppression (<500L / day). Mains water available from SA Water at Cockburn.<br><br>**Diamond Drilling:**<br>Drilling water will be obtained from Broken Hill or local dams (with Landowner / Manager permission). The water will be piped directly to the drill site from the laydown water tanks or transferred directly to the drill site and will be retained in the sumps and circulation by appropriate bunding. There will be no wastewater or runoff from the site. | | |
| Will surface water and/or mineral drillholes be used as a water source/supply?<br>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 ☒ |
| N/A | | |

## 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?<br>If yes, describe the water drilling and investigation activities, including site preparation, vegetation clearance, and safety and maintenance requirements. | Yes ☐ | No ☒ |
| N/A | | |
| 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.<br>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 ☒ |
| N/A | | |

## 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)?<br>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?<br>If yes, attach a Radiation Management Plan and confirmation of endorsement of the plan by the Environment Protection Authority South Australia (EPA). | Yes ☐ | No ☒ |
| Will any other hazardous material be encountered when exploring in the area?<br>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 all impacts associated with the proposed exploration operations (includes exploration camps and laydown areas, tracks).

Completion of rehabilitation must be achieved within 3 months after the expiry of each program notification.

**Staged Rehabilitation** will be undertaken:

- Stage 1 to be completed shortly after drilling is completed:
  - Drill hole decommissioning (as described above)
  - Remove all external waste material to an appropriate waste facility
- Stage 2 (final) rehabilitation will occur once assays are available and remaining samples can be disposed of into the sump (usually within 3 months after drilling is completed):
  - Sumps will be allowed to dry out before backfilling
  - Sump rehabilitation – deposit remaining samples, backfill, cover with stockpiled topsoil, and rake or lightly scarify (to promote vegetation regeneration) with a backhoe
  - A short trench may be excavated (1m W x 3m L x 2m D) at the end of the sample rows and the samples buried and capped with the stockpiled topsoil, where it is more efficient to do so and minimises overall disturbance.
  - Overland access routes and laydown area will be raked or lightly scarified to promote regrowth of vegetation
- Rehabilitation will always aim to return areas disturbed by drilling activities to its original land surface profile and in a condition that will promote regrowth of native vegetation.
- **Photo 8** shows an example of a rehabilitated area
- No fires are lit during the summer months, and only at other times if there is a clear area surrounding and fire danger is minimal (e.g., lack of burnable material and no fire ban period).
- Fire management procedures in places, including policy for “extreme fire danger rating” and firefighting equipment/extinguisher are always available.

State the estimated budget required to rehabilitate all impacted sites.

~$200 / drill hole

### Vegetation Clearance

| | | |
|---|---|---|
| Will any area of cleared native vegetation be unrehabilitated after the authorised period?<br>If yes, provide a map and description of the vegetation present in the application area, the extent of any proposed vegetation clearance and the likelihood of the presence of threatened flora.<br><br>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. | Yes ☐ | No ☒ |
| N/A | | |

## 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 6 – 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 (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**<br>Lists are not exhaustive. | **Potential impacts**<br>Lists are not exhaustive. | **Is the potential impact applicable (Yes/No)**<br>Some potential impacts are applicable to all programs. | **Control strategies**<br>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**<br>LH = likelihood of consequence<br>CQ = severity of consequence | | | | |
| | | | | **LH** | **CQ** | **Risk** | | |
| Stakeholders:<br>• freehold land owners<br>• perpetual lease holders<br>• pastoral lease holders<br>• Aboriginal land (Anangu Pitjantjatjara Yankunytjatjara and Maralinga Tjarutja lands)<br>• Department of Defence<br>• state government departments.<br>• local government (councils)<br>• federal government<br>• native title parties. | Interference to:<br>• existing or permissible land use (includes loss of income, noise, dust, light and other emissions).<br>• buildings, structures, existing tracks or other infrastructure.<br>• aesthetic values of an area.<br><br>Noncompliance with legislative requirements. | Yes<br>(Applicable to all programs.) | • Service Form 21B- Notice of Entry on Land to:<br>o Native Title Claimants (Wilyakali SC2012/001)<br>o Mutooroo Pastoral Company Pty Ltd (Mutooroo Station)<br>o Adam & Kirsty Lomman (Mutooroo Station)<br>o Rohan & Julie Rogers (Pine Creek Station)<br>• Contact and liaise with Station Managers of Mutooroo Pastoral Co. and Pine Creek Station.<br>• Avoiding use of station tracks after heavy rains so they are not damaged<br>• Stick adherence to sign posted speed limits on station tracks.<br>• An exploration Native Title Agreement pursuant to Part 9B in place and registered with DEM. | *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.<br><br>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:<br>DEW | Interference to:<br>• existing or permissible land use.<br>• buildings, structures, existing tracks or other infrastructure.<br>• aesthetic values of an area.<br><br>Noncompliance with legislative requirements. | No<br>(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:**<br>• **no unauthorised interference with park management activities.** | Provide confirmation that:<br>• 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<br>• 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. |

| Impact assessment | | | | | | | Outcomes | Outcome measurement criteria (inc. monitoring plan) |
|---|---|---|---|---|---|---|---|---|
| **Receptor**<br>Lists are not exhaustive. | **Potential impacts**<br>Lists are not exhaustive. | **Is the potential impact applicable (Yes/No)**<br>Some potential impacts are applicable to all programs. | **Control strategies**<br>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**<br>LH = likelihood of consequence<br>CQ = severity of consequence<br>**LH** | **CQ** | **Risk** | | |
| 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<br>(Applicable to exploration programs located within or impacting on native vegetation.) | • Drill sites and access tracks avoid areas of substantial native vegetations (e.g. tree groves)<br>• There is generally only minor disturbance of native vegetation. Any track or drill pad clearing is conducted using the 'blade up' method.<br>• Drill sites and access tracks are rehabilitated in such a way as to promote regrowth of native vegetation.<br>• Vehicles are restricted to a single access track to minimise disturbance of native vegetation.<br>• No fires are lit during the summer months, and only at other times if there is a clear area surrounding and fire danger is minimal (e.g. lack of burnable material and no fire ban period).<br>• Fire management procedures in places, including policy for "extreme fire danger rating".<br>• Firefighting equipment/extinguisher are available at all times.<br>• Compliance with Fire Ban ratings, which is checked daily (CFS website), and a risk assessment of the prevailing conditions is completed and communicated each morning. When CFS Fire rating is Low-Very High – work will continue, and conditions/risks will be monitored. If Fire rating is Severe – work will continue based on risk assessment if winds are low and the prevailing conditions are assessed as acceptable to continue work. Where Fire rating is Extreme-Catastrophic – work will cease, and crew will remain on standby until the fire rating is reduced. | *2* | *B* | *Low* | **No permanent loss/modification of native flora and fauna populations and their habitats through:**<br>• **clearance**<br>• **fire**<br>• **other**<br>**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:<br>• The area and method of disturbance is consistent with that described in the PEPR.<br>• No uncontrolled fires* occurred as a result of exploration activities.<br><br>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<br>(Applicable to all programs.) | • Vehicles are kept clean and free of mud if coming from an area of known introduced weed species.<br>• Inspection of former drill sites to check for any introduced species and removal if found. | *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:<br>• 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.<br>• 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. |
| All fauna | Entrapment of fauna through open drillholes and excavations. | Yes<br>(Applicable to exploration programs that involve drilling and/or require excavations.) | • All holes are capped following completion.<br>• Excavations are constructed with a shallow angle ramp to allow small animals to escape.<br>• Excavations are appropriately barricaded/bunded to prevent access. | *2* | *B* | *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:<br>• All drillholes were permanently or temporarily capped/plugged immediately upon completion.<br>• No fauna and livestock became trapped in drillholes and/or excavations throughout the duration of the program.<br>• 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.<br><br>Representative photos are to be included within the annual exploration compliance report.<br><br>Provide the information requested within the 'Rehabilitation' section of the annual exploration compliance report. |
| Aboriginal heritage sites | Disturbance to Aboriginal heritage. | Yes<br>(Applicable to all programs.) | • An Aboriginal Heritage Clearance Survey is conducted with the traditional owners to clear the drill sites and access prior to commencement of drilling.<br>• Site inductions to be completed and avoidance of any known sites –these will be marked on GPS and on-ground (star-pickets, flagging).<br>• If an Aboriginal site (previously unknown) is accidentally disturbed, all work must cease immediately and not recommence.<br>• Report any sites as soon as practicable | *2* | *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:<br>• Heritage sites were not impacted during the conduct of the exploration program, unless prior approval was obtained under the appropriate legislation.<br>• Work ceased on discovery of a significant site and recommenced only after authorisation.<br>• Aboriginal heritage sites identified during the exploration program were appropriately recorded and reported to authorities, if not previously known. |
| European heritage sites and | Disturbance to European heritage | No | • No registered sites within the drilling area. | | | | **No disturbance to European** | Demonstrate no impact to heritage sites and sites of scientific and environmental |

| Impact assessment | | | | | | | Outcomes | Outcome measurement criteria (inc. monitoring plan) |
|---|---|---|---|---|---|---|---|---|
| **Receptor**<br>Lists are not exhaustive. | **Potential impacts**<br>Lists are not exhaustive. | **Is the potential impact applicable (Yes/No)**<br>Some potential impacts are applicable to all programs. | **Control strategies**<br>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**<br>LH = likelihood of consequence<br>CQ = severity of consequence | | | | |
| | | | | **LH** | **CQ** | **Risk** | | |
| sites of scientific and environmental significance | sites and sites of scientific and environmental significance (e.g. geological monuments, fossil reserves). | (Applicable to exploration programs located close to or within European heritage sites and sites of scientific and environmental significance.) | | | | | **heritage sites and to sites of scientific and environmental significance unless prior approval under the relevant legislation is obtained.** | significance by:<br>• 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.<br>• Providing a statement within the annual exploration compliance report confirming sites were not impacted during the conduct of the exploration program. |
| Soil/vegetation/fauna | Soil/vegetation contamination (e.g. hydrocarbons, rubbish, drill samples/cuttings, ablutions, other sources). | Yes<br>(Applicable to all programs.) | • All external waste material is removed from site to an approved waste facility.<br>• Unwanted drill samples are emptied into sumps/pits, which are backfilled, covered with top soil and lightly scarified to promote seed germination. The empty plastic bags are removed from site.<br>• Drilling rig and ancillary equipment is properly maintained and regularly inspected to ensure there are no diesel or oil leaks.<br>• Stored fuel correctly bunded, spill kits used, contaminated soil immediately removed off site to an approved waste management facility. | *2* | *B* | *Low* | **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:<br>• The name, location and contact details of the authorised waste disposal facility.<br>• 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.<br>• Photographic evidence within the annual exploration compliance report demonstrating that all fuel and chemical storage facilities were managed in accordance with EPA requirements.<br><br>Maintain photographs of all exploration sites and provide representative photos within the annual exploration compliance report demonstrating that drill cuttings are:<br>• removed from site and disposed of at a licensed facility<br>• 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<br>• 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.<br><br>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<br>(Applicable to all programs.) | • No grading of tracks or clearing of drill pads that will cause permanent disturbance to top soil profile or topography. Any track or drill pad clearing is conducted using the 'blade up' method.<br>• Final rehabilitation of each site will be completed by raking or lightly scarifying to promote seed germination and new vegetation growth. Any stockpiled vegetation will be spread over the site.<br>• Heavy vehicle tracks will be scarified and filled in if there is judged to be any danger of gullying and erosion.<br>• The land surface will be returned to its original profile.<br>• All sample material and spoil from the sumps will be backfilled into the sumps.<br>• Topsoil from sumps will be stockpiled separately, spread back over the filled in sumps and lightly scarified to minimise wind and water erosion and promote seed germination and plant regrowth.<br>• If water does have to be carted for diamond drilling, truck movements will be kept to a minimum and tracks will be rehabilitated as described above. Tracks can be watered down if required.<br>• Where possible, water will be carted to tanks located on existing station tracks and piped from there to the drill site, to minimise track powdering and rutting. | *1* | *B* | *Low* | **Where soil disturbance occurs as a result of exploration activities, ensure that:**<br>• **topsoil quality and quantity is maintained**<br>• **the soil profile and topography is reinstated to original conditions**<br>• **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:<br>• 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.<br>• 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.<br>• There are no signs of accelerated soil erosion during and post rehabilitation of disturbed sites.<br><br>Representative photos to be included within the annual exploration compliance report.<br><br>Provide the information requested within the 'Rehabilitation' section of the annual exploration compliance report. |

| Impact assessment | | | | | | | Outcomes | Outcome measurement criteria (inc. monitoring plan) |
|---|---|---|---|---|---|---|---|---|
| **Receptor**<br>Lists are not exhaustive. | **Potential impacts**<br>Lists are not exhaustive. | **Is the potential impact applicable (Yes/No)**<br>Some potential impacts are applicable to all programs. | **Control strategies**<br>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**<br>LH = likelihood of consequence<br>CQ = severity of consequence<br>**LH** | **CQ** | **Risk** | | |
| Surface water | Alteration to surface water – interference to surface drainage. | No<br>(Applicable to exploration programs that are likely to impact on surface drainage channels.) | • Surface drainage will not be interfered with. | | | | **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).<br><br>Alternatively, provide copies of water affecting permits within the annual exploration compliance report. |
| Groundwater/aquifer | Groundwater contamination:<br>• contamination of aquifers through entry of pollutants from the surface<br>• interconnection between aquifers<br>• degradation of natural hydrostatic conditions (maintain pre-drilling pressures). | Yes<br>(Applicable to all exploration programs that may intersect groundwater.) | • Understanding of the hydrogeology of the prospect areas indicates multiple aquifers and confined aquifers are unlikely in these areas.<br>• Monitoring of water outflow (if any) conductivity during drilling and the level to which the water rises in the hole relative to the water table will be used to assess the potential an unexpected, confined aquifer is intersected. If indicated the hole will be abandoned in accordance with M21 Guidelines. | *2* | *B* | *Low* | **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 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.<br><br>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<br>(Applicable to all exploration programs that may intersect groundwater or where activities require the discharge of groundwater into the surrounding environment.) | • Groundwater will be contained within the sumps and circulation system. Any inadvertent spillages will be immediately cleaned up and returned to the sumps. | *2* | A | *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.<br><br>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. | No<br>(Applicable to all exploration programs that may require the use of water from existing dams, water bores or mineral drillholes.) | • There are no other existing water users in the vicinity. The groundwater being used is very saline and unsuitable for use by stock. | *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.<br><br>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<br>(Applicable to exploration programs that create new access tracks.) | • No new access tracks to be cleared.<br>• Access drill sites by driving vehicles cross country from existing station tracks in most direct route avoiding vegetation where possible.<br>• Minimise disturbance by confining heavy equipment to a single access track.<br>• Rectify any significant residual compaction along the wheel tracks if necessary, by light scarifying. | *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.<br><br>Representative photos are to be included within the annual exploration compliance report.<br><br>Provide the information requested within the 'Rehabilitation' section of the annual exploration compliance report. |
| Community/landowners | Damage to infrastructure and loss of income through fire. | Yes<br>(Applicable to all programs.) | • No fires are lit during the summer months and only at other times if there is a clear area surrounding and fire danger is minimal (e.g. lack of burnable material and no fire ban period).<br>• Fire management procedure sin place, including policy for 'extreme fire danger rating'.<br>• Firefighting equipment/extinguisher are always available. | *2* | *D* | *High* | **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.<br><br>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. |

| Impact assessment | | | | | | | Outcomes | Outcome measurement criteria (inc. monitoring plan) |
|---|---|---|---|---|---|---|---|---|
| **Receptor**<br>Lists are not exhaustive. | **Potential impacts**<br>Lists are not exhaustive. | **Is the potential impact applicable (Yes/No)**<br>Some potential impacts are applicable to all programs. | **Control strategies**<br>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**<br>LH = likelihood of consequence<br>CQ = severity of consequence | | | | |
| | | | | **LH** | **CQ** | **Risk** | | |
| General public | Injury or death to members of the public as a result of exploration activities. | Yes<br>(Applicable to all programs.) | • Restricting access to only Company personnel as far as possible, and only to others (e.g. contractors) who have had an induction.<br>• Enforcing best practice OHS measures.<br>• Appropriate danger signs erected.<br>• Enforcing speed limits. | *1* | *E* | *High* | **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.<br><br>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.<br><br>Public and employee/contractor exposure to low level radiation. | No<br>(Applicable to exploration programs located within known uranium or thorium deposits.) | N/A | | | | **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:<br>• Radiation levels post exploration and rehabilitation are consistent with pre-existing background levels.<br>• Employee and contractors exposure levels were within safe limits during the exploration program. |
| 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)

Havilah Resources are an established and competent exploration company with an almost 20 year history of exploring in this region. The company employs capable geological and exploration staff with an average of more than 25 years exploration industry experience spread over many varied terrains, environments and jurisdictions. Havilah has maintained a above industry standard of exploration and rehabilitation compliance in South Australia.

Havilah Resources operates its own equipment including an AC/RC drilling rig and support vehicles, backhoes and grader. Experienced and trained operators are employed directly by the company and these operators are engaged to conduct the drilling programs and environmental rehabilitation associated with these activities. The company's exploration staff have a long history of working on pastoral country and are also responsible and involved in the management of Kalkaroo Station which is owned by Havilah Resources.

Havilah Resources have a number of operational and procedural documents in place including but not limited to;

- Employee Induction and HSE Booklet
- Remote Areas Operations – Emergency Response and Hazard Awareness Booklet
- Guidelines for working on Station Properties
- Project Specific Inductions including guidelines regarding Heritage Clearance conditions and governmental drilling approval conditions
- Field Emergency Response Manual
- Incident Investigation Management Procedure
- Communication, Consultation and Involvement
- Pre-Drilling Safety and Equipment Checklist
- Drill Rig Safety Inspection Checklist
- Equipment, Drill Rig and Vehicle Inspection Reports
- Numerous Hazard, Risk Management, Incident Reporting and JSA documents and records
- Toolbox Meetings, Training Registers

In addition to the geological and field exploration staff, Havilah have a Principal Environmental Advisor engaged, Geoff Borg, MSc (Hydrogeology and Groundwater Management): Geoff is an experienced hydrogeologist with over 25 years of experience directing, managing, and advising environment assessment, compliance, risk management, and approvals for industrial operations and resource projects across Australia. Experienced in incorporating technical, legal, and business requirements into effective communications and plans for strategic assessment and implementation of approvals and work plans to achieve environmental compliance. Geoff's experience includes oil refineries and storage terminals, planning and environmental approvals for projects including fuel storage facilities, ranging from service stations to underground coal gasification, carbon capture and storage, and mining projects.

An Environmental Management System specific to the project is being developed which details the environmental management approach adopted for the project to achieve the environmental outcomes as defined in this PEPR. The Environmental Management System will include Environmental Management Plans with procedures and processes to ensure continuous improvement and compliance with legal and other requirements.

The Environmental Management System will also incorporate information for the following:

- environmental governance
- environmental training, awareness and competence
- audits and inspections
- emergency preparedness, incidents and response
- monitoring, measurement and evaluation
- management review
- documentation and records.

All staff and contractors at the Mutooroo Project Area will be required to work under the Environmental Management System.
Havilah Resources has developed an Environmental Policy, which will be used for the project as follows:

*Havilah Resources is committed to conducting all its operations in an environmentally responsible manner. The Company will plan and manage its activities to minimise disturbance to the environments in which it operates.*

*To fulfil our objectives, the Company will observe all environmental laws and regulations and use all available resources to:*

- *Review, update and audit this policy and environmental management plans to affect positive environmental outcomes in all the Company's activities.*
- *Discuss and resolve with stakeholders any possible area of environmental conflict.*
- *Integrate environmental considerations into our work planning and operations.*
- *Assess and where possible, reduce the potential impact of our operations on the environment in which we work.*
- *At all times work towards improving our environmental performance.*
- *Rehabilitate the environment affected by our operations, where required by legislation.*
- *Actively promote environmental awareness and provide relevant environmental information, instruction and training for management and personnel.*
- *Where necessary, engage the services of expert external personnel to advise on environmental matters.*
- *Co-operate with government authorities, Traditional Owners, environmental groups, landowners and any other stakeholders in the formulation and application of rational and practical environmental guidelines and legislation.*

*The aim of this Environmental Policy is to provide realistic and achievable guidelines for all personnel involved in the Company's activities.*

## 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.

N/A

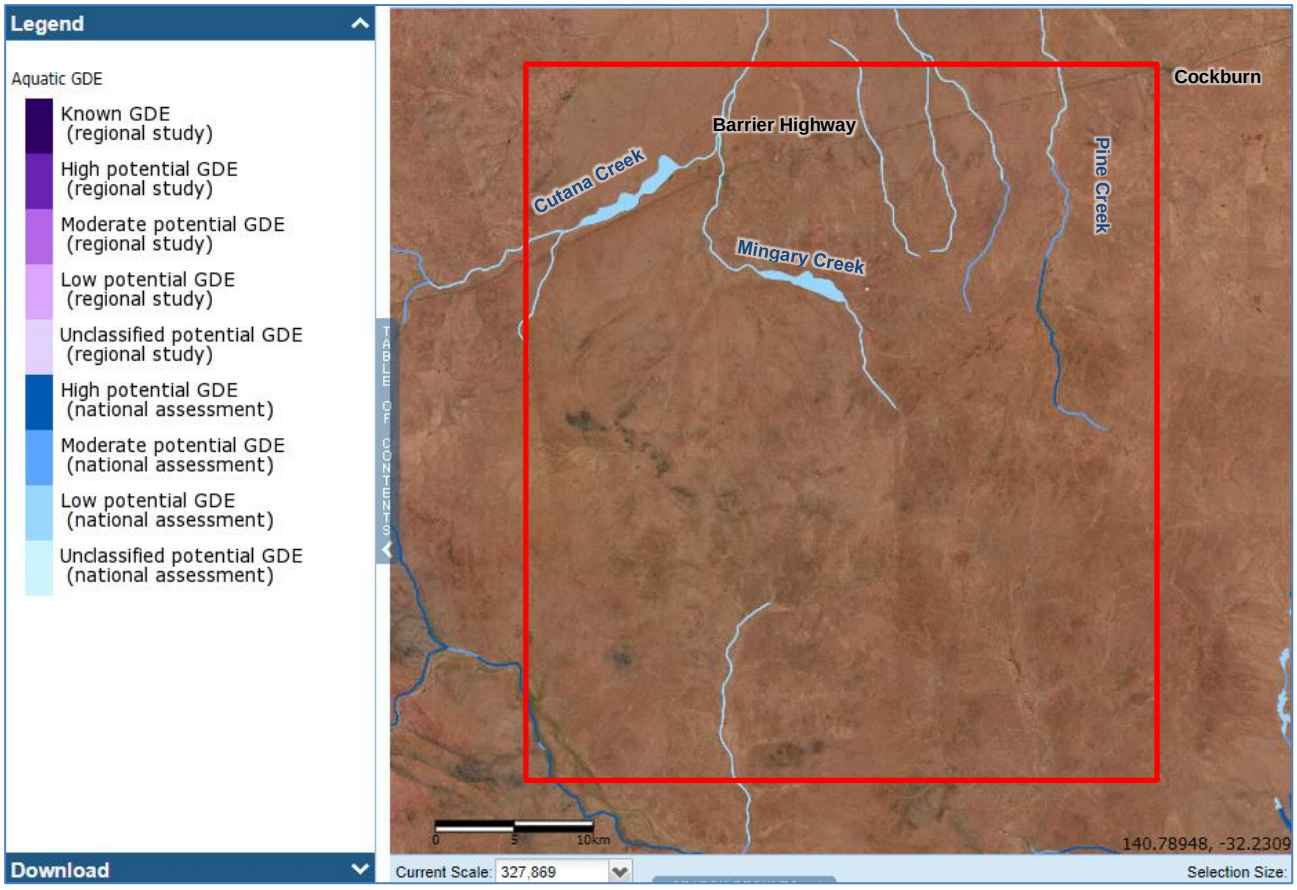
## SECTION I – PHOTOS

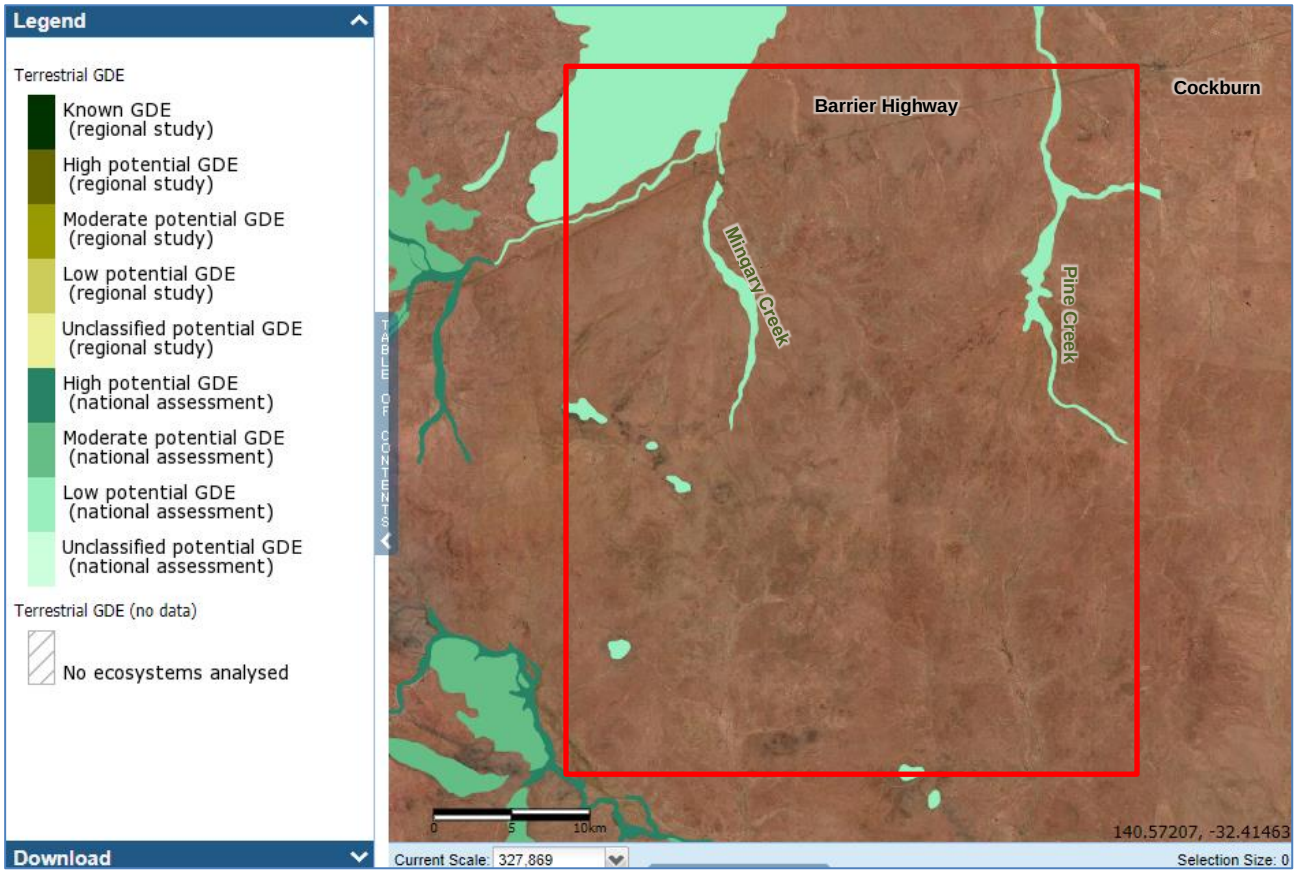
Include photographs in this section:

- 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 |
|---|---|---|---|---|---|---|
| Mutooroo Project Area – Regional | N/A | Photo 1<br>Section C | - | - | 54 | Groundwater Dependent Ecosystems<br>Aquatic (top), Terrestrial (centre), Subterrean (bottom) |




Legend
Terrestrial GDE
Known GDE (regional study)
High potential GDE (regional study)
Moderate potential GDE (regional study)
Low potential GDE (regional study)
Unclassified potential GDE (regional study)
High potential GDE (national assessment)
Moderate potential GDE (national assessment)
Low potential GDE (national assessment)
Unclassified potential GDE (national assessment)
Terrestrial GDE (no data)
No ecosystems analysed
Download
TABLE OF CONTENTS
Barrier Highway
Cockburn
Mingary Creek
Pine Creek
0 5 10km
140.57207, -32.41463
Current Scale: 327,869
Selection Size: 0


Legend
Subterranean GDE
Known GDE (regional study)
High potential GDE (regional study)
Moderate potential GDE (regional study)
Low potential GDE (regional study)
Unclassified potential GDE (regional study)
Subterranean GDE (no data)
No ecosystems analysed
Download
TABLE OF CONTENTS
0 5 10km
140.70844, -32.07916
Current Scale: 327,869
Selection Size: 0

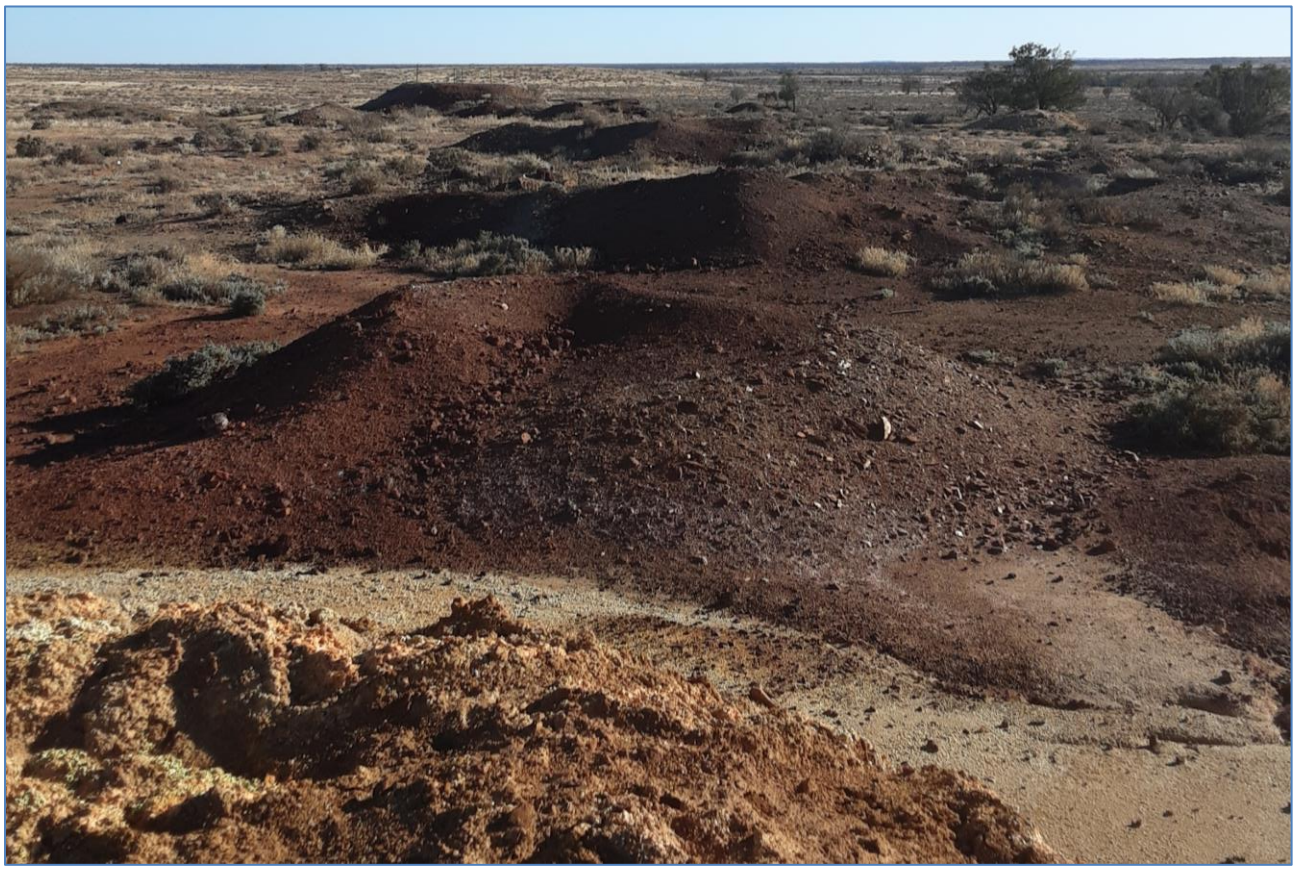
| Site Identification | Date taken | Photo number & PEPR section reference | Easting (GDA94) | Northing (GDA94) | Zone | Details and Comments |
|---|---|---|---|---|---|---|
| West Mutooroo (formerly Scorpion) Prospect, EL6656 | 28/03/2018 | Photo 2<br>Section C and D | 491500 | 6434400 | 54 | General view |

| Site identification | Date taken | Photo number & PEPR section reference | Easting (GDA94) | Northing (GDA94) | Zone | Details and Comments |
|---|---|---|---|---|---|---|
| West Mutooroo Prospect, EL6656 | 19/02/2021 | Photo 3<br>Section C and D | 491450 | 6434400 | 54 | Old sulphidic mullock dump, West Mutooroo |

| Site identification | Date taken | Photo number & PEPR section reference | Easting (GDA94) | Northing (GDA94) | Zone | Details and Comments |
|---|---|---|---|---|---|---|
| Kings Dam (King Brown) Prospect, EL6656 | 28/03/2018 | Photo 4<br>Section C and D | 492200 | 6426700 | 54 | Looking NE |

| Site identification | Date taken | Photo number & PEPR section reference | Easting (GDA94) | Northing (GDA94) | Zone | Details and Comments |
|---|---|---|---|---|---|---|
| Kings Dam (King Brown) Prospect, EL6656 | 28/03/2018 | Photo 5<br>Section C and D | 492200 | 6426700 | 54 | Looking SW |

| Site identification | Date taken | Photo number & PEPR section reference | Easting (GDA94) | Northing (GDA94) | Zone | Details and Comments |
|---|---|---|---|---|---|---|
| Mutooroo Mines, EL6592 | 19/02/2021 | Photo 6<br>Section C and D | 493700 | 6430800 | 54 | General View |



| Site identification | Date taken | Photo number & PEPR section reference | Easting (GDA94) | Northing (GDA94) | Zone | Details and Comments |
|---|---|---|---|---|---|---|
| Cockburn (formerly Allansons) Prospect, EL5848 | 20/02/2021 | Photo 7<br>Section C and D | 498050 | 6446730 | 54 | General View |

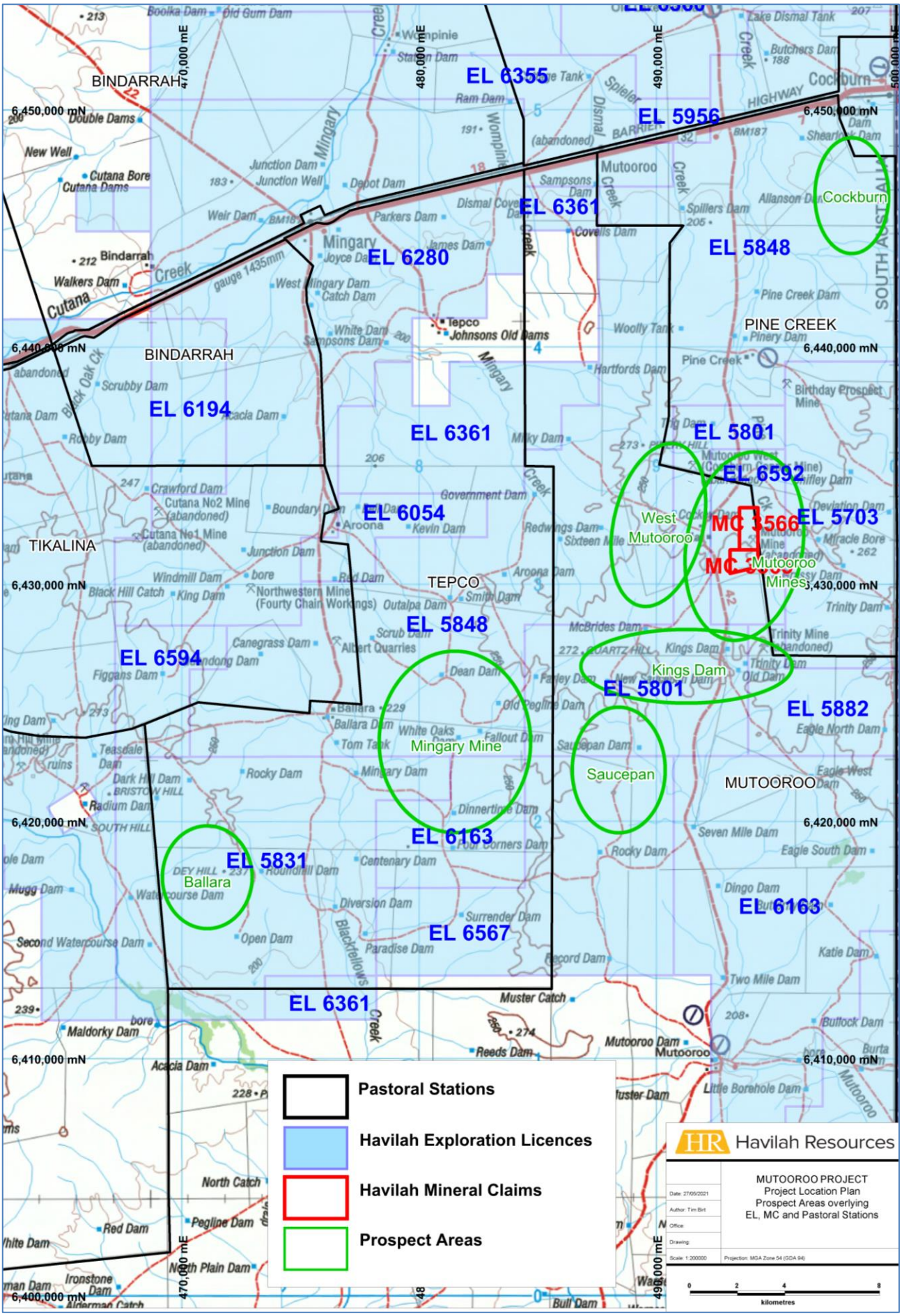
| Site identification | Date taken | Photo number & PEPR section reference | Easting (GDA94) | Northing (GDA94) | Zone | Comments/details |
|---|---|---|---|---|---|---|
| SCRC002<br>EL6656 | 30/03/2023,<br>25/04/2023,<br>16/11/2023 | Photo 8<br>Section C and D | 493579 | 6425667 | 54 | Prior to drilling (top), immediately after drilling (middle), after rehabilitation (bottom), looking south to southeast. |

## SECTION J – MAPS

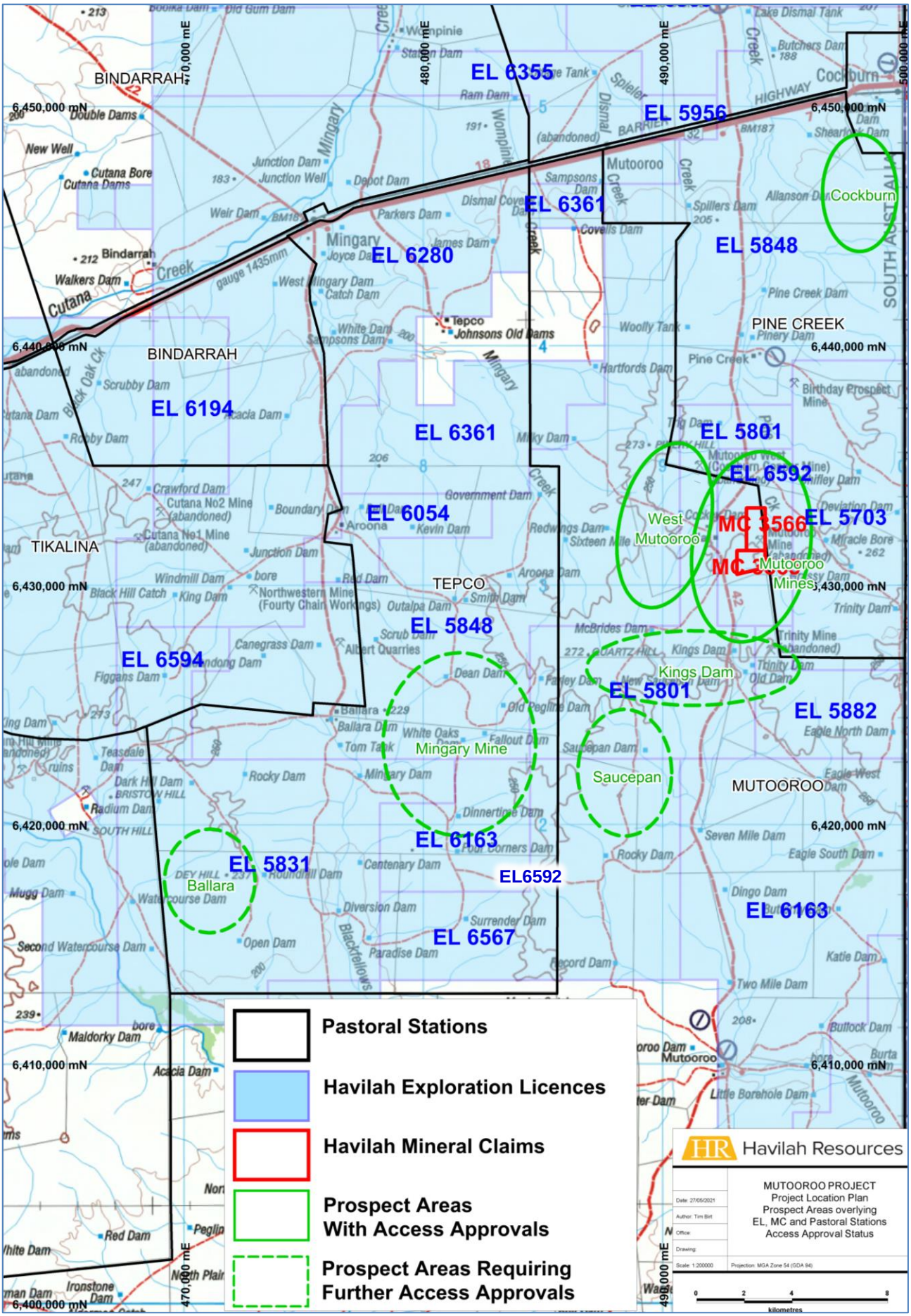
Provide a map(s) showing the following information that is located adjacent to or within the proposed area of operations, where applicable:

- tenement boundaries,
- cadastral information,
- existing surface contours,
- existing vegetation,
- 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 area(s),
- location of existing ephemeral and permanent rivers, creeks, swamps, streams or watercourses and water management structures,
- location of towns, houses and homesteads, existing roads, rails, fences, transmission lines, buildings, dams and pipelines
- known sightings of listed species,
- location and extent of all environmentally sensitive areas,
- any relevant land use types (e.g. parks and reserves, Aboriginal freehold land, Woomera Prohibited Area).

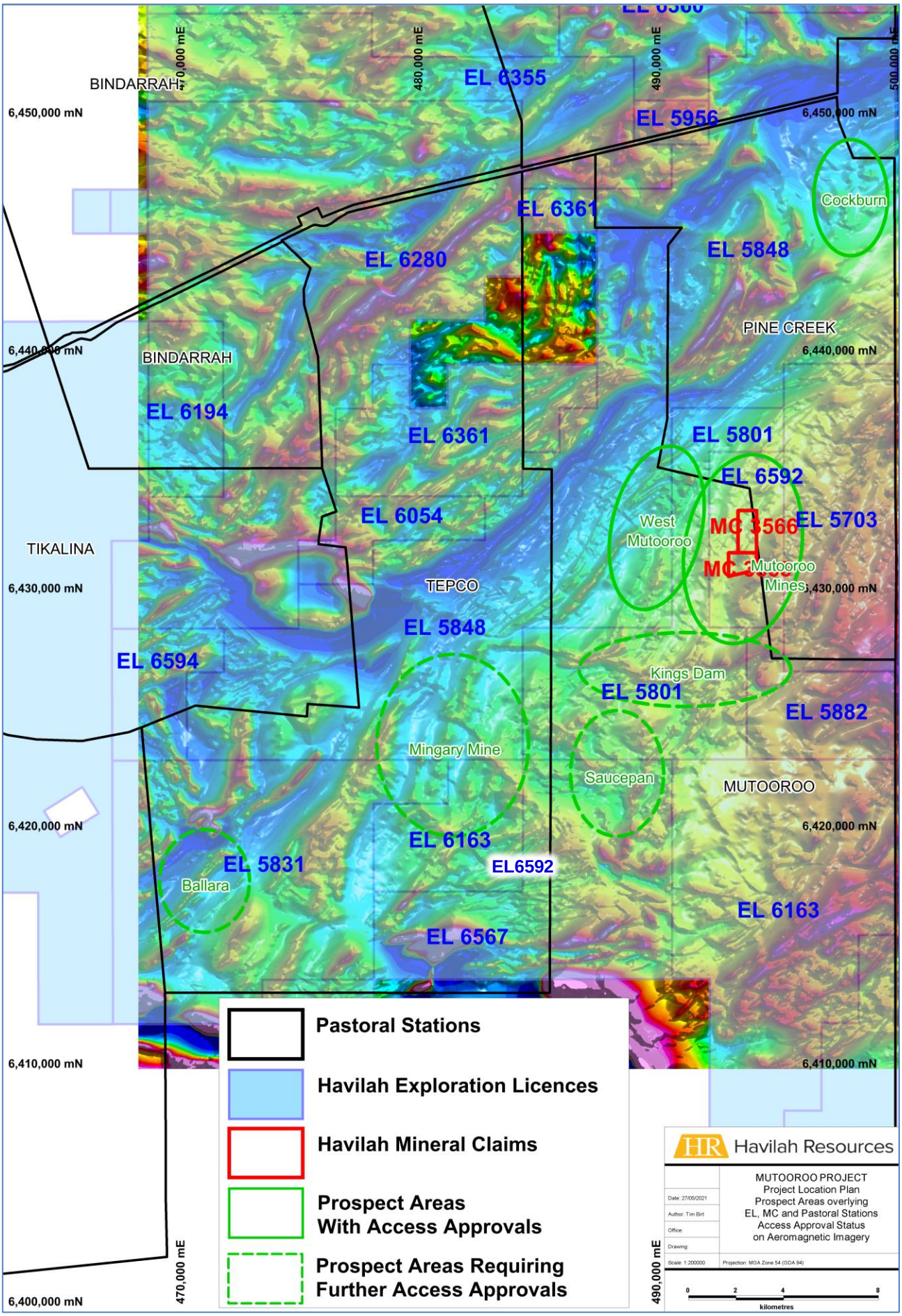
All maps and sections must conform to the standards outlined in the Exploration PEPR Terms of Reference.




**Map 1: Regional location, showing the location of MPA Prospects for Proposed Drilling, Tenement Boundaries, Pastoral Boundaries, Topography and Infrastructure (1: 200,000 scale).**




**Map 2: Regional location, showing the location of MPA Prospects for Proposed Drilling, Tenement Boundaries, Pastoral Boundaries, Topography, Infrastructure and Access Status (1: 200,000 scale).**




**Map 3: Regional location, showing the location of MPA Prospects for Proposed Drilling, Tenement Boundaries, Pastoral Boundaries, Topography, Infrastructure and Access Status on Aeromagnetic Imagery (1: 200,000 scale).Map 3: Mutooroo Project Area Prospects and regional Magnetic high/lows (1: 100,00 scale).**

## 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.