

Mining Management Exploration Activities

Northern Territory of Australia – Mining Management Act 2001

It is recommended that the Mining Management Plan (MMP) is completed in conjunction with the user guide available on the [Northern Territory Government website](#).

Section 1 – Project Details

Project Name Provide new or existing project name	West Arunta Rare Metals Project
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Authorisation Number Insert existing authorisation number, where applicable	
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Operator Name Use ASIC-ABR registered name (if a company), or name of the applicant	GSW Resources Pty Ltd
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Operator ABN and ACN numbers	ACN 653 791 130 ABN 61 653 791 130
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Location and Access Details Include brief description of the location, access details, and distance to nearest town or community	<p>The project is located on Mt Doreen Station in the West Arunta region between 40 and 120 km west of Yuendumu in the Central Desert Shire.</p> <p>Access from Alice Springs is via the Tanami Highway and the the Vaughan Springs Road (a public road) thence station tracks and 4WD cross-country routes.</p> <p>Target areas comprise largely flat plains comprising quartz lag and clay with sparse vegetation cover & three sandplain areas.</p>
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Target Commodity Details Include target mineral commodities (i.e. gold, copper etc.)	Rare Earth Elements hosted in regolith materials and associated granitoid-hosted Rare Metals: Main target elements: Nd, Pr, Sm, Tb, Dy, Y, Be, Rb, Sn.
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Mining Activities Summarise the mining activities (exploration) to be the subject of the proposed Authorisation or Variation. Drilling programs over a maximum of four years are supported and encouraged and can be staged. Please refer to the guidelines for further information.	Year 1: Initial reconnaissance drilling using a Toyota 6x6 Landcruiser-mounted aircore rig to provide cross-country access without track construction and minimal ground disturbance at drill sites (up to 190 holes x 10-25m depth) focused on the EL33195 target area. Year 2: Subject to positive results, follow-up infill drilling with a Toyota 6x6 Landcruiser-mounted aircore rig as above (up to 130 holes x 10-25m depth) plus additional broad-spaced reconnaissance drilling on other target areas (up to 60 holes) to test the nature of the regolith.
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Proposed Schedule Include start and finish dates of ground disturbing work	Year 1. August-October 2023 Year 2. May-August 2024
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Mining Interest and Land Ownership

List the mining interests (titles), the title holder name/s, the title expiry date and the Property name/Land holder (e.g. pastoralist or Aboriginal land trust) for each title.

Title Number	Title Holder	Expiry Date	Underlying Property Name or Land Holder
EL33042	GSW Resources Pty Ltd	26/06/2028	Mt Doreen Station PPL1035
EL33043	GSW Resources Pty Ltd	26/06/2028	Mt Doreen Station PPL1035
EL33195	GSW Resources Pty Ltd	06/11/2028	Mt Doreen Station PPL1035
EL33292	GSW Resources Pty Ltd	03/04/2029	Mt Doreen Station PPL1035

Delete or add rows as required

Please note a Land Access Agreement (LAA) is required for disturbance proposed on Pastoral Properties on Exploration Licence (EL).

Organisational Structure

Position Title	Name
Managing Director	Mr Samuel Smart
Exploration Manager	Dr Wayne Taylor
Radiation Safety Officer	Dr Wayne Taylor

Delete or add rows for various position titles as required

Section 2 – Operator Self-Assessment of the Environmental Risk

The purpose of this self-assessment is to ensure Operators complete a project risk assessment of potential environmental impacts and are aware of other legislative obligations from various Agencies. As a result of this self-assessment, further information may be required in the form of a management plan to enable full assessment of the MMP. If you have any queries please contact a Mining Officer prior to submitting the MMP. Useful resources to assist with this self-assessment are provided in the User Guide.

Environmental considerations

ASSESSMENT ASPECT	YES or NO	ACTIONS REQUIRED (if answered YES)	APPENDED INFORMATION (e.g. evidence of consultation with DEPWS and/or management plan where required).
<p>Step 1: Are there any threatened flora and fauna species or habitats of significance that may occur in the proposed work area?</p>	<p>YES</p>	<p>In assessing the likelihood of threatened species or significant habitats occurring at or near the drill sites the DEPWS NR Maps threatened species atlas was inspected https://nrmaps.nt.gov.au/nrmaps.html. Four threatened fauna species are recorded from the vicinity of planned drill-site areas: <i>Grey Falcon</i> <i>Falco hypoleucos</i> IUCN Category: VU <i>Black-footed Rock Wallaby</i> <i>Petrograde lateralis centralis</i> IUCN Category: NT <i>Common brushtail possum</i> <i>Trichosurus vulpecula vulpecula</i> IUCN Category: EN in the Central Desert. <i>Greater Bilby</i> <i>Macrotis lagotis</i> IUCN Category: VU No threatened species of flora are recorded. The drill-site areas do not overlap with any sites of conservation or botanical significance, nor are any important wetlands present. The main threat factors affecting these species are feral animal predation, habitat degradation and altered fire regimes. DEPWS information sheets for conservation management of these species have been viewed and if these species are encountered during drilling operations appropriate buffer zones will be established. The only detailed Baseline Flora and Fauna Studies known within proximity (20-40km) of the drill-sites were undertaken by Low Ecological Services in the Bigrlyi area. Bigrlyi is centrally-located and lies at the western end of the Burt Plains Bioregion, in which all drill-sites are also located. The surveys did not find any species of flora or fauna of significance at the NT or National level and no threatened species were recorded despite targeted searches that included the Black-footed Rock Wallaby. In view of the absence of threatened fauna, or possibly, their presence at very low population densities in the area, the risk of low-impact aircore drilling disturbance to these species or their habitats is judged to be low. If the scope of exploration work increases in the future, area-specific baseline flora and fauna studies will be initiated.</p>	<p>Baseline flora and fauna reports by Low Ecological Services are appended (2010 & 2014) plus a EPBC Protected Matters Search which lists the possible presence of 11 threatened fauna species based largely on habitat suitability, however, none of these species were found during surveys and some are only occasionally-recorded migratory birds, which are of least concern. Other information includes DEPWS threatened species information sheets for the 4 species recorded near drill site areas.</p>

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ASSESSMENT ASPECT	YES or NO	ACTIONS REQUIRED (if answered YES)	APPENDED INFORMATION (e.g. evidence of consultation with DEPWS and/or management plan where required).
Step 2: Are there any known declared weeds within the proposed work area?	NO	Weed risk assessment: An inspection of the DEPWS NR Maps weeds atlas reveals that no declared weed species have been recorded at proposed drill-sites. Within the general area (50 to 100km radius of drill sites), however, there are a small number of sites where priority weeds have been identified. Under the DEPWS Alice Springs Regional Weeds Strategy these include the Class A weeds: Mesquite , Rope Cactus and Prickly Pear Cactus , and the Class B weeds: Parkinsonia , Rubber Bush and Athel Pine . Mostly these occurrences are listed as 'Occasional and localised' or 'Present-density unknown'. The only detailed weed survey in the area was undertaken in the centrally-located Bigrlyi area, and only two introduced species: Buffel Grass and Birdwood Grass were identified, neither are declared weeds. GSW is aware of its weed management obligations as outlined in the Weed Management Advisory AA7-017. Even though weed risk is judged to be very low, to limit the potential spread of weeds, vehicles will be washed down on entry to and on departure from the tenements.	DEPWS Alice Springs Regional Weeds Strategy; Bigrlyi Baseline Flora and Fauna Report 2014.
Step 3: Will you be using water from bores or other sources for the operation?	YES	Drilling water will be sourced from a water bore on ELR32552 by arrangement with Energy Metals Ltd. As the amount of water extraction will be less than 2ML/year, and the bore is not within a water control district, a water extraction licence is not required.	

Environmental assessment and cultural considerations

ASSESSMENT ASPECT	YES or NO	MANAGEMENT REQUIREMENTS
Step 4: Is your project likely to have a significant impact on the environment?	NO	Refer to the NTEPA Environmental Factors and Objectives Guideline. As discussed in Section 6 the proposed drilling program is very low-impact drilling with minimal ground disturbance, no drill pad or track construction and industry standard waste handling. No significant impact on threatened species habitat is considered likely.

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ASSESSMENT ASPECT	YES or NO	MANAGEMENT REQUIREMENTS
<p>Step 5: Are there Aboriginal sacred sites in the Project area?</p>	YES	<p>Sacred Sites are protected under the NT <i>Aboriginal Sacred Sites Act 1989</i> and administered by the Aboriginal Areas Protection Authority (AAPA). It is recommended that advice be sought from AAPA in relation to sacred site protection.</p> <p>GSW has inspected the register of sacred sites held by the AAPA and notes that a number of sites occur in the vicinity of drill areas. However, no sites occur within drill area boundaries. Appropriate measures will be taken to avoid any disturbance to such sites by staff or contractors.</p>
<p>Step 6: Are there archaeological and heritage sites in the Project area?</p>	NO	<p>Heritage and archaeology sites are protected in the NT. NT Department of Territory Families, Housing and Communities (DTFHC) administers the <i>Heritage Act 2011</i>.</p> <p>Seek advice in relation to protection of heritage and archaeological sites.</p> <p>An inspection of the heritage register reveals no sites within the tenement areas.</p>

Section 3 – Amendments

As per Section 41(3) of the *Mining Management Act*, an MMP reviewed and amended under Section 41(1)(a) is to have amendments made since the previous MMP submission clearly identified.

Section	Amendment

Delete or add rows as required

Section 4 – Activities Proposed for this MMP only

Provide relevant EL numbers

Mining Interests (i.e. titles)	EL33042	EL33043	EL33195	EL33292
Number and type of proposed exploration drill holes	20 x light-vehicle-mounted aircore holes	20 x light-vehicle-mounted aircore holes	320 x light-vehicle-mounted aircore holes	20 x light-vehicle-mounted aircore holes
Maximum depth of proposed holes (m)	25m	25m	25m	25m
Number and size of drill pads to be cleared (Length: m x Width: m)	No clearance or minimal 2m x 2m clearance for fire safety	No clearance or minimal 2m x 2m clearance for fire safety	No clearance or minimal 2m x 2m clearance for fire safety	No clearance or minimal 2m x 2m clearance for fire safety
Total area of drill pads to be cleared (ha)	0.008	0.008	0.13	0.008
Number of proposed water bores	NIL	NIL	NIL	NIL
Is drilling likely to encounter groundwater in multiple or confined aquifers? (Y, N, unsure) If answering yes, please provide the number of exploration holes where this is likely to occur	N – drilling above the water table; an inspection of the NR Maps water bore register indicates bores in the drill areas are either dry or intersected unconfined groundwater at depths >30m	N – drilling above the water table; an inspection of the NR Maps water bore register indicates bores in the drill areas are either dry or intersected unconfined groundwater at depths >27m	N – drilling above the water table; an inspection of the NR Maps water bore register indicates bores in the drill areas are either dry or intersected unconfined groundwater at depths >29m	N – drilling above the water table; an inspection of the NR Maps water bore register indicates bores in the drill areas are either dry or intersected unconfined groundwater at depths >56m
Number of costeans	NIL	NIL	NIL	NIL
Volume to backfill costeans (Length: m x Width: m x Depth: m)	N/A	N/A	N/A	N/A
Number of bulk sample pits	NIL	NIL	NIL	NIL
Volume to backfill bulk sample pits (Length: m x Width: m x Depth: m)	N/A	N/A	N/A	N/A

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Mining Interests (i.e. titles)	EL33042	EL33043	EL33195	EL33292
Bulk sample pits approved under <i>Mineral Titles Act?</i> (Y or N). If Yes provide approval	N/A	N/A	N/A	N/A
Line/track clearing: (length m x width m)	None – access by 4WD cross- country travel	None – access by 4WD cross- country travel	Several short sections of access track to be cleared with loader 1,700m x 3.5m	None – access by 4WD cross- country travel
Area of proposed line/track clearing (ha)	0	0	0.595	0
Camp area to be cleared (ha)	0	0	0	0
Camp Infrastructure (i.e. demountable, tents) Please provide a complete list with measurements as required in the security calculation	None, Staff will be based at the Bigryli Exploration Camp by arrangement with Energy Metals Ltd	None, Staff will be based at the Bigryli Exploration Camp by arrangement with Energy Metals Ltd	None, Staff will be based at the Bigryli Exploration Camp by arrangement with Energy Metals Ltd	None, Staff will be based at the Bigryli Exploration Camp by arrangement with Energy Metals Ltd
Other				
Total proposed area of disturbance (ha)	0.008	0.008	0.725	0.008

Staging approach based on disturbance can be proposed and will be considered by the Department.

Section 5 – Previous Disturbance (for existing Authorisations only)

The 'Disturbance Tracking' spreadsheet must be completed and attached to the MMP submission to complete this section. The spreadsheet is available on the departmental web page where this template is located.

Section 6 – Environmental Management

By checking these shaded boxes, you are agreeing to implement the following minimum environmental management standards on the project area. Where boxes have been left unchecked, justification is required.

6.1	✓	Blade-up approach for clearing will be used (i.e. no windrows, leave root stock and topsoil)
6.2	✓	Significant vegetation will be avoided during clearing (i.e. large trees, specimens providing habitat or food sources, riparian vegetation, and threatened species)
6.3	✓	Vegetation clearing during, and immediately after rainfall events, will be avoided
6.4	✓	Vegetation clearing will be kept to the minimum required to safely traverse vehicles and drill rigs along tracks and drill pads
6.5		Where blade-up techniques cannot be employed, topsoil and vegetation will be stockpiled appropriately for rehabilitation purposes
6.6	✓	All employees and contractors will be trained and inducted in relation to the management of environmental risks in the work area, including weeds, waterways, threatened species, soil erosion, sacred sites and heritage areas
6.7		Sumps will be lined or tanks of appropriate size to contain water, sediment and drilling fluids encountered during drilling, will be used
6.8	✓	Sumps, drill holes, and fuel stores will be located away from environmentally significant areas and water courses
6.9		Excavations (sumps, costeans and pits) will be appropriately ramped to allow fauna egress
6.10	✓	Drill holes will be securely capped immediately after drilling
6.11	✓	Vehicle hygiene measures will be employed to prevent the introduction and spread of invasive species and pathogens when mobilising vehicles and equipment from one location to another
6.12	✓	Hydrocarbon spills will be minimised using liners and drip trays under machinery, and appropriately sized spill-kits available in the event of a spill
6.13	✓	Hazardous substances (including hydrocarbons) will be stored and handled in accordance with relevant Australian Standards
6.14	✓	Hydrocarbons will be stored in lined and bunded areas
6.15	✓	Waste will be stored securely while on-site to minimise windblown rubbish and access by feral animals
6.16	✓	Waste will be removed off-site and disposed of at an appropriate waste management facility
6.17	✓	All environmental incidents will be reported to the Department in accordance with Section 29 of the <i>Mining Management Act</i> .
6.18	✓	Acid and Metalliferous Drainage (AMD) and Potentially Acid Forming (PAF) material derived from drilling cuts will be managed to avoid AMD and PAF related issues on site.

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6.19	✓	Radioactive/NORM drill cuttings will be managed to avoid radiation related issues on site.
6.20	✓	Dust management will be implemented on site.

Justification and alternative management measures:

6.1 to 6.5 - The main drill target areas are situated on flat, quartz lag and clay dominant plains that support sparse natural vegetation. Three additional target areas are located on sand plains and one area is located along an existing station track. GSW Resources will be using low-impact aircore drilling with the rig mounted on a turbo-diesel Toyota 6x6 Landcruiser tray-back all-terrain vehicle such that no or minimal vegetation clearance is required and only minor access-track construction to drill sites is necessary. Small areas of no more than 2x2m size will be cleared of low vegetation by hand, if necessary, at the drill-site for fire safety purposes.



6.5 – All track clearing will be blade/bucket up – there will be minimal topsoil disturbance.

6.6 – Successful completion of GSW's Site Induction training course, which covers all aspects of environmental and safety awareness, is compulsory for all staff and contractors.

6.7 – All drilling will be above the water table as determined from water bore logs in drill areas.

6.9 – No excavations are proposed.

6.10 – Departmental guideline AA7-029 for capping and plugging holes will be followed.

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6.11 – Vehicles will be washed down on entry to and on departure from the tenements to avoid the spread of weeds/pathogens. Washdown facilities are available at the Bigryli exploration camp.

6.13 to 6.14 - Accommodation, water supply, chemical and fuel storage will be based out of the Bigryli exploration camp (an established, centrally-located 25-man camp) by arrangement with owners Energy Metals Ltd. All industry-standard storage methods for fuels and hazardous substances will be followed.

6.18 – Drill cuttings will be monitored for the presence of sulphides but none have been reported in water bore logs from the proposed drill areas (NT Natural Resource Maps inspection).

6.19 – Rare metal mineralisation may be associated with NORM., therefore, drill cuttings will be monitored with a Radeye scintillometer, and uranium and thorium levels will be measured by pXRF to determine the presence of any NORM, which, if found, will be appropriately managed.

To date, assays on over 70 surface samples from drill areas have recorded an average Th level of 78 ppm and an average U level of 15 ppm, which equates to an activity level below the NORM threshold of 1 Bq/g (Activity in Bq/g = U-ppm/80 + Th-ppm/240). The available data for this early-stage project, including the absence of previous reports of radioactive mineralisation from drilling near target areas, do not support the need for a formal Radiation Management Plan (RMP) at this stage. Dr Taylor as a qualified RSO will be on site for the drill programs and will manage any radiation hazards should they arise. If radioactive mineralisation is encountered, the MMP will be amended with the addition of a formal RMP.

Section 7 – Rehabilitation and Closure

By checking these shaded boxes, you are agreeing to implement the following minimum rehabilitation standards on the project area. Where boxes have been left unchecked, justification is required.

A refund of security related to completed rehabilitation on site requires the submission of a rehabilitation report including photographs, an updated security calculation and updated disturbance tracking spreadsheet to the Department.

7.1	✓	Drill holes will be plugged below ground level at a minimum depth of 0.4 metres and soil mounded to prevent subsidence, within 6 months of completion of drilling.
7.2		Drill holes encountering multiple or confined aquifers will be grouted with concrete.
7.3	✓	Drill samples/spoil will be returned down drill holes, buried in sumps, or removed from site.
7.4	✓	All drill hole and access markers including flagging tape, wooden markers and star pickets will be removed from site.
7.5		Cut and fill drill pads will be re-contoured to be consistent with the surrounding terrain.
7.6	✓	Drill pads and compacted areas along the contour (on sloping ground) will be ripped/scarified of and tracks will be cross-ripped (zig-zag).
7.7	✓	Tracks will be rehabilitated, including pushing in all windrows, unless otherwise agreed in writing by the land holder or appropriate third party.
7.8	✓	Appropriate erosion and sediment controls will be installed where erosion is evident or likely to occur.
7.10	✓	Access through watercourses will be removed and banks restored.
7.11	✓	All previously disturbed areas will be stable, with no evidence of active soil erosion.
7.12		All excavations will be backfilled within 6 months of their completion.
7.13		All water bores will be decommissioned unless otherwise agreed in writing by the land holder or appropriate third party.
7.14	✓	All rubbish and infrastructure will be removed from site.
7.15		Topsoil will be replaced and vegetation re-established.
7.16	✓	Contaminated soils (e.g. hydrocarbon or hazardous chemicals) will be rehabilitated or removed from site.
7.17	✓	Monitoring will be undertaken following the wet season or a significant rainfall event

Justification and alternative management measures:

7.2 – Drilling is shallow, max. 25m, and above the water table;
 7.5 – No cut and fill drill pads are proposed;
 7.7 – Minor track clearance required in Area 1 but most drill sites will be accessed by cross country travel. Any, excessive soil compaction on access routes to drill sites will be monitored and rectified if necessary;
 7.12 – No excavations are planned;

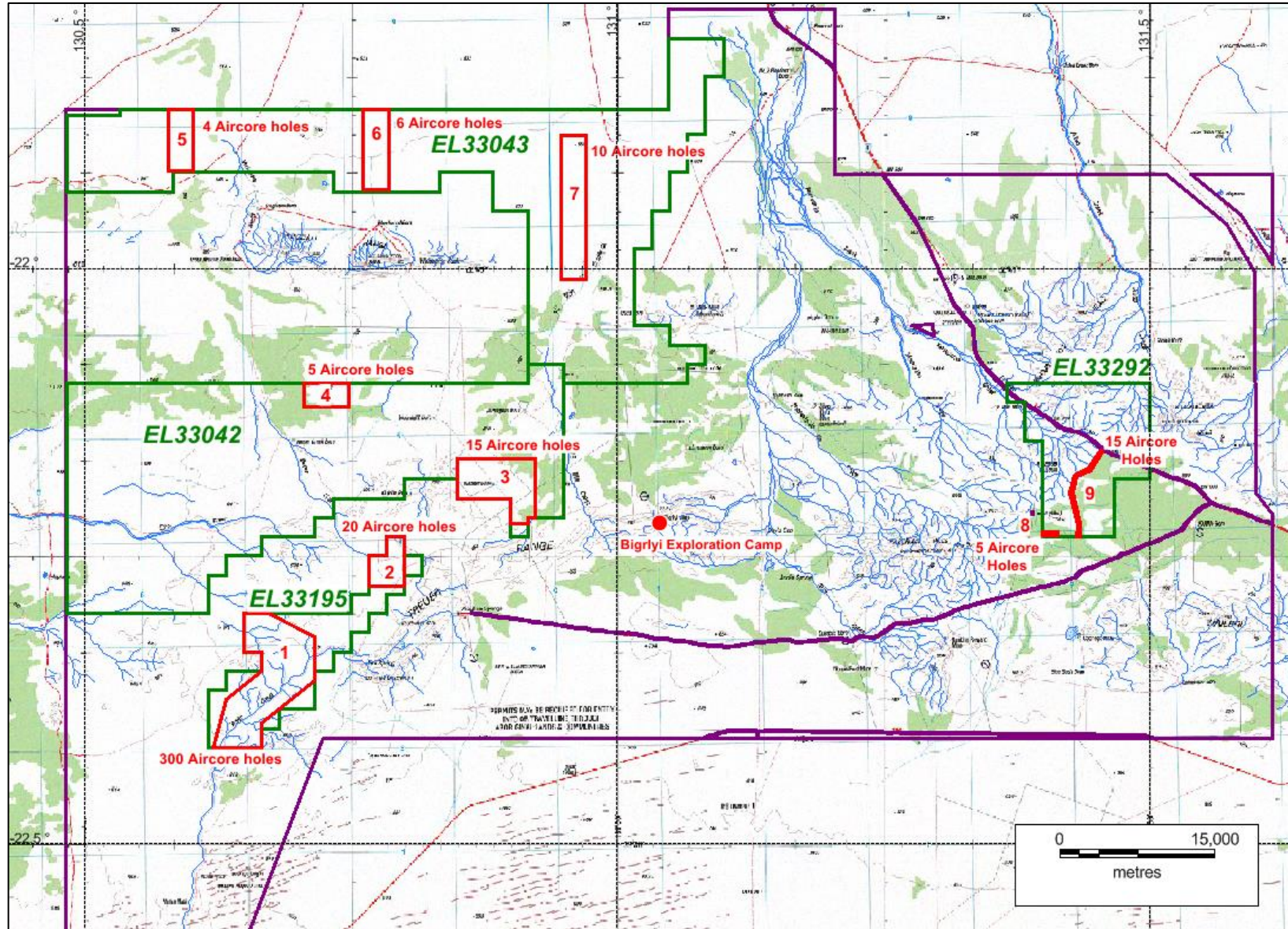
7.13 – No water bores are planned to be drilled;
 7.15 – It is not intended to remove topsoil; as any vegetation removal will be minimal, natural re-vegetation processes should be sufficient for site recovery – the effectiveness of natural re-vegetation will be assessed by post-drilling monitoring and remediated if necessary.

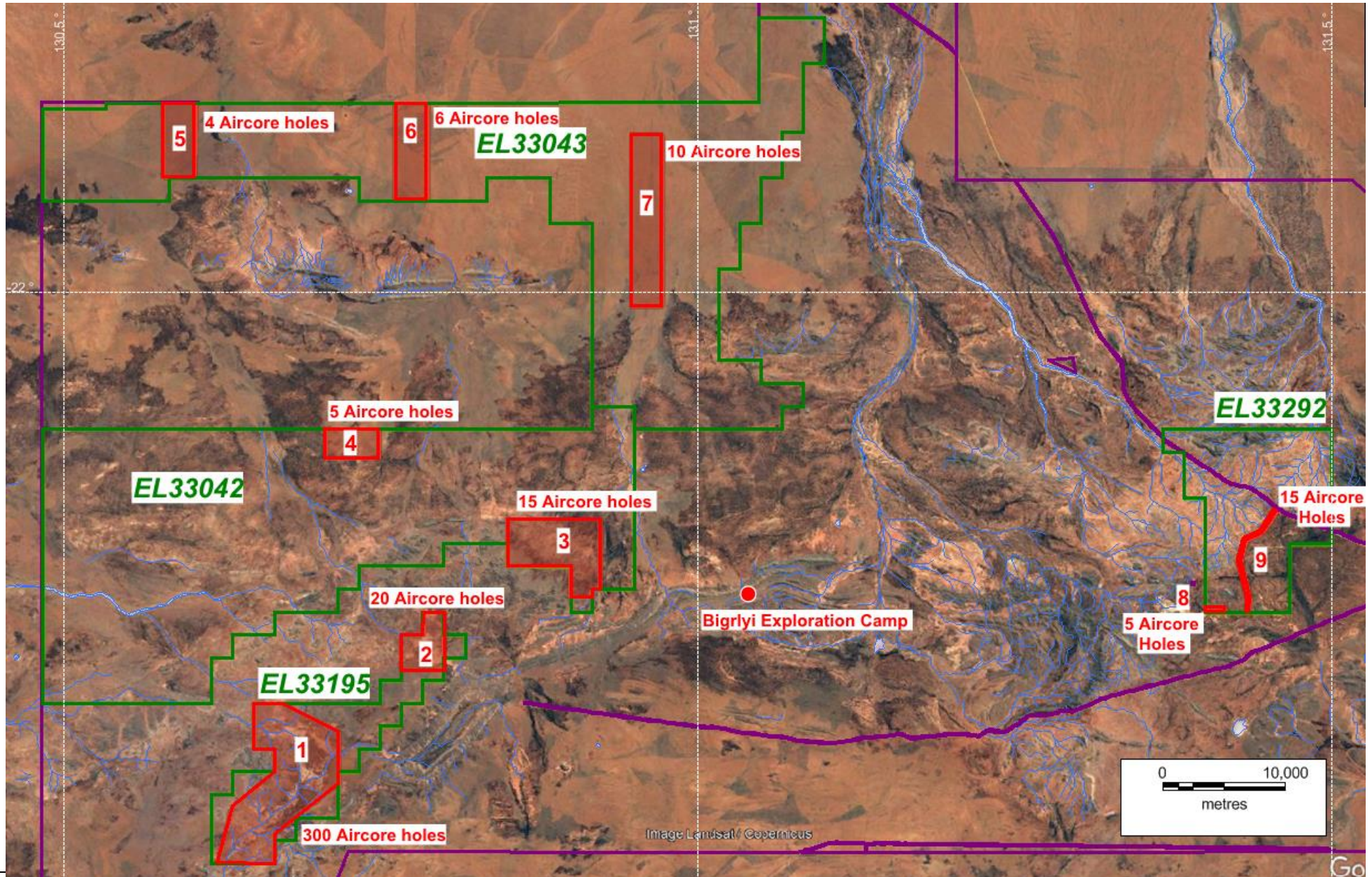
Section 8 – Required Attachments

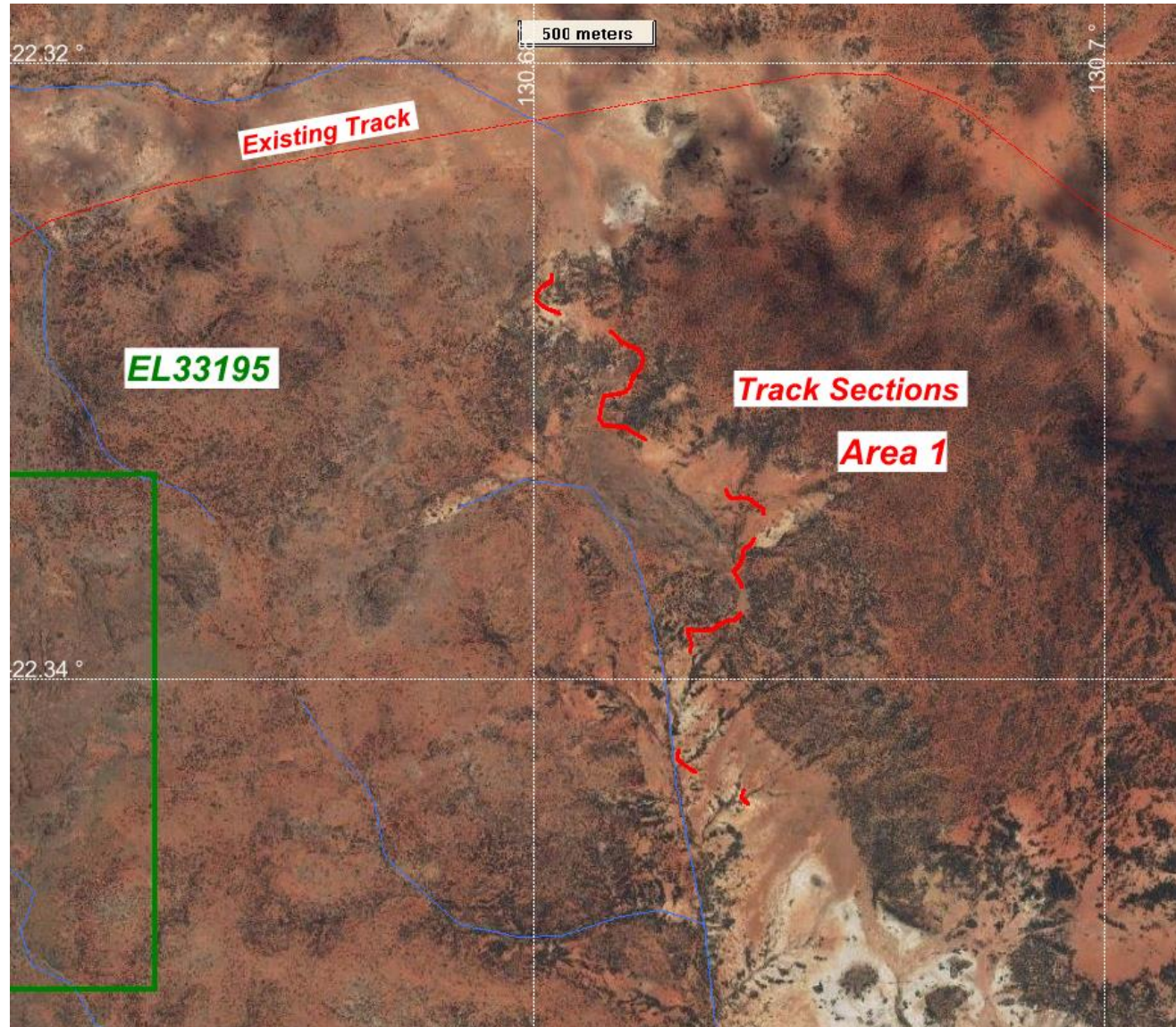
8.1	✓	Initial Application for Authorisation or variation of Authorisation (only if details on the form have subsequently changed).
8.2		Nomination of Operator Form, where required
8.3	✓	Security Calculation Spreadsheet
8.4	TBA*	Evidence of Land Access Agreement if operating on an Exploration Licence (EL) on Pastoral Lease (e.g. two-ways exchange of email)
8.5		Disturbance tracking spreadsheet (for existing Authorisations)
8.6	✓	Spreadsheet with coordinates of proposed drill holes or polygons of target areas
8.7	✓	KML/shape files/track logs of proposed tracks, camp sites and proposed drill holes or polygons of target areas
8.8	✓	Map(s) of the work area(s) showing: <ol style="list-style-type: none"> 1. title boundaries and title numbers (green polygons) 2. current and proposed drill holes, or polygons of target areas (red polygons numbered 1 to 9 with numbers of drill holes indicated) 3. current and proposed tracks (1.7 km minor track clearing in Area 1) 4. rehabilitated areas (n/a) 5. camp sites (n/a) 6. heritage sites or significant environmental areas 7. environmental constraints
8.10		Radiation Management Plan (if applicable)
8.12	✓	Document(s) being appended in relation to Section 2 (if any): Protected Matters - MNES layers - April 3rd 2023.pdf Bigrlyi Baseline Flora and Fauna Report 2010.pdf Bigrlyi Baseline Flora and Fauna Report 2014.pdf black-footed-rock-wallaby.pdf common-brushtail-possum.pdf greater-bilby.pdf grey-falcon.pdf Alice-Springs-regional-weeds-strategy-2021-2026.pdf

*8.4 – LAA: a formal agreement is in progress and currently awaiting signature.

Attachment – Work Area Maps – Areas 1 to 9 with number of drill holes indicated







Track sections likely to require clearance for drill access in Area 1 amounting to 1.7km.