APPLICATION Mining Act 1971 ("the Act")

EXPLORATION PROGRAM FOR ENVIRONMENT PROTECTION AND REHABILITATION

Government of South Australia
Department of State Development

USE THIS FORM WHEN: Applying to conduct research exploration drilling programs in accordance with Section 15 of the Mining Act 1971.

SECTION A - GENERAL DETAILS

PEPR approval period	12-month approval period, with an additional 3 months to complete all rehabilitation
Authorisation Details	The area designated as 'Coompana 3 Survey Area' under Section 15 of the Mining Act 1971, as published in the South Australian Government Gazette 26th of May 2016. File Reference MER F2013/002375.
Holder of Authorisation	Director of Mines
Operator	Geological Survey of South Australia, Department of State Development
Project Supervisor/contact person(s)	Luke Tylkowski, Drilling Coordinator, Geological Survey of South Australia, Department of State Development (08 8463 3064). The Drilling Coordinator has a B.Sc(Hons Geol); over 10 years' experience in the exploration and mining industry; and experience managing large-scale, complex drilling programs (and associated contractors) in both remote and environmentally sensitive areas. Dr. Rian Dutch, Principal Geologist and Project Leader, Geological Survey of South Australia, Department of State Development (08 8463 3042). Project leader has a PhD in geology; over 12 years' experience leading and managing geological survey projects around South Australia; extensive experience managing research projects in both remote and environmentally sensitive areas; and experience managing large-scale, complex research and exploration drilling programs (and associated contractors) within South Australia.
Project/prospect name	Coompana Drilling Project
Location details	The exploration area is located in the far south-west of South Australia located south of the Trans-Australia Railway, east of the SA/WA border, west of a line ~130.00°E and north of the Eyre Highway.
Project Description	The exploration activities detailed herein form part of the Coompana Drilling Program (CDP), which is being conducted by the Geological Survey of South Australia part of the Department of State Development (GSSA) and in partnership with Geoscience Australia (GA). The CDP is a regional pre-competitive geoscience research program, in the Coompana Province of western South Australia. The Coompana Province is a region that is completely covered by Neoproterozoic to Cenozoic sediments, with no known basement exposures, and only 12 existing drill holes that intersect basement. Due to these factors the geology and mineral prospectivity of the region is largely unknown. The Coompana Drilling Project will aim to address this lack of knowledge and test geophysically derived geological models by acquiring new basement core samples from the region. Six holes are proposed as part of Stage 1 of the CDP and all are within the Nullarbor Wilderness Protection Area.

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	The GSSA will be contributing ~$2.295m toward the cost of the CDP through the PACE Copper initiative, with an additional ~$1m contributed by GA. In total, approximately 3 to 6 drill holes will be completed during this stage of the CDP.			
Proposed Project Schedule	*Start date*	15/03/2017	*End date*	14/03/2018

DECLARATION

The information contained in this application is to the best of my knowledge true and accurate.

Name	Luke Tylkowski
Position	Mineral Systems Drilling Coordinator
Email	luke.tylkowski@sa.gov.au
Phone	08 8463 3064 or 0405533466
Date	23/11/2016

I agree ☒

SECTION B – PROGRAM PREPARATION AND ACCESS TO LAND

Work undertaken in preparing the proposal

Summarise the research and field work undertaken in preparing the proposal including:

- Desktop reviews of existing information.
- Field visits for reconnaissance and landholder consultation purposes.
- Contractor consultation, i.e. equipment scale and type.
- Other information used when planning the proposed program.

Detailed interrogations of Department of State Development (DSD) databases that contain previous drilling in the research area have been conducted to determine drilling techniques previously employed, cover depth and lithologies intersected. Drill targets have been selected in consultation with GA and are based on past exploration activities and available geological and geophysical datasets to intersect different inferred geological regions. The aim is to begin characterisation of the Coompana Province through a diverse array of basement lithologies.

Information stored within various SA Government GIS databases has been interrogated as a part of the desktop review of the proposed drilling program, and more specifically, the location of individual drill sites.

A reconnaissance field trip conducted by staff from the Geological Survey was completed during late October, early November 2016. During this field trip, all of the proposed drill sites were visited and pegged. Observations were made with regard to: topographical and drainage features; vegetation type and density; wildlife; and nearby infrastructure (e.g. existing tracks). Site were chosen in consultation with Traditional Owners and locating areas of naturally cleared vegetation, where feasible.

All drillholes, as part of Stage 1 of the CDP, are within the Nullarbor Wilderness Protection Area (NWPA), which is co-managed by the Department of Environment Water and Natural Resources (DEWNR) (on behalf of the Minister) and the Far West Coast Aboriginal Corporation (FWCAC). Consultation has been undertaken with several key members of DEWNR who may be involved with either the on-ground activities, or the assessment of this PEPR document. The DEWNR Senior Ranger for Mining will be the contact point for all on-ground activities and program information. Initial phone conversations will be followed up with face-to face meetings and reconnaissance field trips. Feedback on the proposed program from these discussions has enabled key areas of concern to be factored into the risk management process for field activities, outlined herein. Discussions have commenced with members of the Far West Coast Native Title Claim Group and the Nullarbor Parks Co-management board to outline the drill program and proposed activities. These discussions lead towards an Aboriginal Heritage survey which has ensured no sites of either archaeological or ethnographic significance are impacted by the proposed program.

The contracting of drilling services is currently being undertaken through DSD procurement processes and will be determined through a select tender process. Drilling equipment requirements are being proposed through the scope of work and tender documents. Discussions have been held with potential earthmoving operators regarding necessary equipment for rehabilitation and drilling operations. Local contractors will be sought providing they can adequately fulfil requirements and are commercially competitive. At this stage, no final decisions have been made and no commercial contracts have been signed for the provision of these services.

Land use and tenure

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

Land Tenure	Applicable
Freehold	☐
Pastoral Lease	☐
Perpetual Lease	☐
Crown Land	☐
Mining Reserve	☐
Aboriginal Freehold and Leasehold (APY Lands, MT Lands, etc.)	☐
Forestry Reserve	☐
Marine Reserve	☐
* (National parks, conservation parks, conservation reserves, regional reserves)	☒
Nullarbor Wilderness Protection Area	
* Other	☐

Land Use	Applicable
Grazing	☐
Cereal/cropping	☐
Residential	☐
Township	☐
Industrial	☐
Tourism	☐
Conservation	☒
Defence - Woomera Prohibited Area	☐
Defence - Cultana	☐
Road reserve	☐
* NVHA	☐
Orchard/vineyard	☐
European Heritage Sites	☒
Koonalda Homestead	
Sites of Scientific significance (geological monuments, fossil reserves etc.)	☒
Koonalda Cave	
Other (e.g. historic mining)	☐

Provide any additional information if required.

N/A

Woomera Prohibited Area (WPA)

Will activities be conducted within the WPA? If yes, indicate if you have an access permit in place.	Yes ☐	No ☒

Native title

Using the table below, describe how you have complied with the requirements of the Mining Act for each tenement

Native title			
Is the proposed area of exploration located on native title land?		Yes ☒ No ☐ (If no, no further information in this section is required.)	
Are there registered native title party/parties in the area of proposed exploration?	Yes ☒ No ☐	Far West Coast People	If no, an Environment, Resources and Development (ERD) Court determination is required.

Landowner Details and Consultation (Regulation 65(1)(c))

Provide a detailed plan describing how applicable landowners and other stakeholders will be engaged. The plan must demonstrate how the following requirements will be identified and achieved:

- Individual or groups of similarly affected persons.
- The type of interested or affected party (resident, council, government agency, etc.).
- Concerns/issues raised by stakeholders.

There are six proposed drillholes to be completed during this stage of the Coompana Drilling Program, all of which are within the Nullarbor Wilderness Protection Area.

As stated above, the NWPA is co-managed by DEWNR (on behalf of the Minister) and the Far West Coast Aboriginal Corporation (FWCAC). Co-management Agreements (CMA) were signed on 5 December 2013 between FWCAC and the Minister for Sustainability, Environment and Natural Resources for parks in the Far West Coast Native Title Area.

The GSSA acknowledges that co-management recognises and respects the connection between Indigenous Australians, their cultural heritage and connection with place and country; and enables DEWNR to work in partnership with Indigenous communities to cooperatively manage parks and biodiversity and to support the management of their land.

The value of early and open consultation is recognised through preliminary phone discussions and face-to-face meetings with key DEWNR and FWCAC representatives. DEWNR and the FWCAC will also be formally advised in writing of the scope of field activities in advance of the activities commencing, including the required statutory notification period. Initial meetings with the DEWNR and FWCAC representatives during the reconnaissance and planning stages have been used to determine key issues prior to exploration activities commencing. Existing and planned control measures surrounding those areas of concern have been discussed and additional control measures will be put in place to address any specific items.

Communication with the Senior Ranger for Mining will be ongoing throughout the program and he will be provided with the contact details for the Drilling Project Coordinator, who will act as a central key contact point (i.e. Liaison Officer). It is envisaged that follow-up meetings with the Senior Ranger for Mining will occur on a basis of not less than once every month, or as otherwise mutually agreed, until the program is completed. This, coupled with the provision of contact details for the Drilling Project Coordinator, will ensure that any concerns/issues can be promptly raised with the relevant GSSA personnel, and be actioned.

It is important to recognise that the NWPA has been established to; provide protection for the natural resources, wildlife and vegetation; and preservation and protection of Aboriginal sites, features, objects and structures of spiritual or cultural significance. In this regard, every effort will be made to minimise the impact of the drilling that may occur in the NWPA – e.g. drill sites will be positioned outside densely vegetated areas, and measures will be put in place to ensure access by Traditional Owners and members of the public.

As the CDP is being undertaken by the GSSA solely for the purposes of geoscientific research, pursuant to Section 15 of the Mining Act, a Native Title Agreement is not required per Part 9B of the Act. Notwithstanding this, consultation has begun with the relevant Native Title group – the Far West Coast Aboriginal Corporation (FWCAC). Initial discussions have been undertaken and written correspondence have been sent to the FWCAC to make them aware of the proposed CDP and to provide some context regarding the program. Through these discussions an Aboriginal Heritage Survey will be organised to ensure no sites of either archaeological or ethnographic significance are impacted through the program.

Consultation and engagement with the FWCAC will be ongoing with updates and information provided for the duration of the drilling program and a copy of this PEPR document will be forwarded on after approval.

SECTION C – DESCRIPTION OF THE ENVIRONMENT

The following elements of the existing environment need only be described to the extent that they may be considered in assessing the potential impacts of the proposed operations. If an element is unlikely to be affected by the operation, include a statement to that effect.

Where possible photographs and other relevant information obtained during site visits should be attached to help describe relevant environmental aspects.

Proximity to Infrastructure and Housing

Information is required to determine if existing infrastructure (both public and private) may be affected by the program, and to determine the extent of impact on the public from noise, dust, etc. The following information must be included:

- Settlements - Indicate the name and distance of the nearest town, and distance to houses and homesteads from the proposed exploration activity.
- Roads and tracks - indicate existing fence lines, roads and tracks, including those which are to be used in the exploration program.
- List 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. should be considered if these may be impacted by the exploration activity.
- Where possible provide this information on a locality plan.

The closest township to the proposed drilling area is Border Village, which lies approx. 13km west of the nearest proposed drill site. Border Village is a possible camp location and source of water, dependent on acceptance and negotiations with commercial entities. All impacts due to traffic, noise etc. will be discussed and minimised through the location of the camp, policy and procedures, traffic management and accommodation used.

There is also a camp facility located at 'Diamond Bore' just north of the Eyre Highway, approximately 50km from Border Village that is owned and operated by the Department of Planning Transport and Infrastructure (DPTI). This may also be a suitable location for a camp, pending approval by DPTI. The area is located by an existing telecommunications microwave tower, cleared and has a shed on the property.

The abandoned homestead of 'Koonalda' lies 14km west from the nearest proposed drill site. This site is state heritage listed, as a site of European cultural significance, with all of the infrastructure at the site protected. It is also a known area for accommodation of caravans and tourism. This is also a proposed camp site and the management strategies listed above will be used to minimise impact on the site and protect the public. This is the least preferred option for a camp site, due to the traffic from tourism at the site.

All proposed drill sites will utilise the network of existing tracks and no new tracks will be created. Tracks will be maintained as required (in consultation with DEWNR), to ensure minimal disruption to the activities of the NWPA and public. The current and existing Eyre Highway will be utilised for access to drill sites.

Drill sites will not be positioned within 500m of any active water access points and positioned to avoid known caves and cavernous areas. Microgravity surveys will be conducted on the high priority holes to locate any caves close to surface.

Scenic lookouts are positioned south of the new Eyre Highway, which may contain water bores in the proximity. If any of these bores are utilised, the infrastructure will be placed to avoid any interference with the public in accessing these areas. Signage will be erected to warn the public of trucks working in the area. Speed restrictions will be in place for all vehicles entering the area.

Dial Before You Dig has been utilised to help locate two fibre optic communication lines that run along the Old Eyre Highway. These lines are in the vicinity of the proposed location of holes CP03 and CP13. The closest line to the relevant hole will be identified in the field through plans and markers and a minimum offset of 50m will be applied.

Refer to Plan 1 – CDP Drillhole Location Plan, for the location of proposed drill sites, station infrastructure and homestead locations.

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, salt pans, clay pans, etc.).

The surface of the Nullarbor Plain is very flat and slopes gently seaward with elevations varying only slightly from 70-100m from north to south of the program area. There is only minor scale relief (<10 m) with kilometre-wide

rises and falls, punctuated with minor depressions containing relatively clay-rich material. Overall, the region appears essentially a vast sparsely vegetated plain with a low susceptibility to erosion. Extremely heavy rainfall in a short period (e.g. a storm event) may produce a sheetwash effect in the general area, however, any erosional effects on areas impacted by drilling activities are likely to be localised.

Soil and Surface Cover

Describe soil types and soil surface cover (for example – gibber, rocky, etc.) in the general area affected by the exploration program. Include details on the susceptibility to compaction, erosion, dust, runoff and any other aspects that may be an issue for disturbance and rehabilitation.

The area has a cover of shallow, red-brown calcareous soil (loam and sand) with limestone remnants covered with a hard calcrete layer in several areas. The gently undulating tableland is built on limestone and bounded by a scarp on its southern limits.

Whilst existing tracks will be utilised for all vehicle movement, any soil dominated areas could become powdery, and generate dust in dry weather. Given that the drilling program will be occurring during the late-Autumn/Winter period, it is anticipated that any dust issues will be minimised through soil moisture and cooler temperatures. Rehabilitation of powdery areas requires wetting the soil through rain, this allows earthmoving equipment to spread the material adequately. Other areas where the road has reached the underlying limestone are hard, sometimes stepped and resistant to erosion. Potholes could be produced within the limestone and may be repaired through backfilling with road base material from the new Eyre Highway.

Hydrology

Will the proposed program interfere with natural drainage (e.g. drainage lines, creeks, floodplains)? If Yes, describe the potential interference.	Yes ☐	No ☒
There are few water courses in the proposed drilling areas, and those that do exist are minor and ephemeral in nature. Most of the surface water soaks in through the limestone, therefore surface drainage channels are rare. No new tracks will be created and all existing tracks do not pass any know watercourses.		
Is the program area located within water protection areas defined under the River Murray Act 2003? If Yes, provide the name(s).	Yes ☐	No ☒
N/A		
Is the program area located within any Prescribed Watercourses or Prescribed Surface Water Areas under the *Natural Resources Management Act, 2004 (NRM Act)?* If Yes, provide the name(s).	Yes ☐	No ☒
N/A		

Groundwater

Is groundwater likely to be intersected when conducting the exploration program? If Yes, use the table below to describe the expected hydrogeological conditions, and identify groundwater aquifers in the exploration area(s) that may be affected. Copy and paste a new a new table for each area where different groundwater conditions may be encountered.	Yes ☒	No ☐

Description of the locality/area where different groundwater conditions may be encountered					
Entire area of the Eucla and Bight Basins, affecting all proposed drillholes					
Formation age and/or stratigraphy unit	**Stratigraphic intervals (depth range (m))**	**Aquifer formation name**	**Aquifer interval/thickness (from-to) (m)**	**Type of aquifer(s) Intersected (e.g. unconfined, confined or artesian)**	**Provide aquifer salinity, depth to water level and any other relevant comments**
Nullarbor Limestone – Miocene-Pliocene	0-45m	N/A	0-45m	Cavernous, unconfined	No data available
Wilson Bluff Limestone - Eocene	45-380m	N/A	50-150m	Cavernous, unconfined	SWL varies between 50-128m. TDS ranges from 10,000-40,000mg\L
Pidinga Formation Carbonaceous Sandstone - Tertiary	100-450m	N/A	150-450m	Minor confined sand aquifers	No data available

Madura Formation Cretaceous	200-650m	N/A	N/A	Confining Bed	Shales, swelling clays, siltstone that acts as a confining bed
Loongana Formation Cretaceous	250-700m	N/A	30-60m	Confined aquifer	Moderate pressure, salinity generally exceeds 14,000mg/L
Permian Sediments	300-900m	N/A	N/A	Confining Bed	Not known as an aquifer, No data available
Basement – Proterozoic	300+m	N/A	N/A	Hard rock aquifer?	Not known as an aquifer, No data available

Is the proposed program located within a Prescribed Wells Area or Prescribed Water Resource Area? If Yes, provide the name of the area.	Yes ☐	No ☒
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: • *Description of the formation and structure of vegetation in the area (for example: woodland, shrubland, grassland, etc.).* • *List of the dominant species.*	Yes ☒	No ☐
In general, the Nullarbor Plain is dominated by low shrubland, mostly bladder saltbush (*Atriplex vesicaria*) and succulants (*Tecticornia sp.*) pearl bluebush (*Maireana sedifolia*) and minor old man saltbush (*Atriplex nummularia subsp. spathulata*) and grasses (*Austrostipa nitida, Austrodanthonia caespitosa*). All proposed drillholes are situated within areas of low shrubland, except the southern most hole CP01, which is situated in low mallee woodland. This vegetation type dominates the south west area of the NWPA, extending 20km north from the coast. It contains mainly mallee Eucalyptus (*Eucalyptus yalatensis*) in association with other Eucalyptus (*Eucalyptus gracilis, Eucalyptus calcareana, Eucalyptus diversifolia ssp.*), taller shrubs (*Melaleuca lanceolata*) and shorter shrubs (*Westringia rigida, Eremophila weldii, Dodonaea stenozyga*) with minor flowering bushes (*Pomaderris forrestiana, Olearia exiguifolia*).		

Significant Habitats and Flora

If you are working within areas of native vegetation, use the below table 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 erinacea	Prickly Wattle	Rare	N/A
Acacia mutabilis ssp. angustifolia	Mallee Wattle	Rare	N/A
Brachyscome tatei	Nullarbor Daisy	Rare	N/A
Eremophila parvifolia ssp. parvifolia	Small Leaf Emubush	Rare	N/A
Eucalyptus diversifolia ssp. hesperia	Candlebark Gum	Rare	N/A
Lepidium pseudoruderale	Bushy Peppercress	Rare	N/A
Phlegmatospermum richardsii	Nullarbor Cress	Vulnerable	N/A
Poa drummondania	Knotted poa	Rare	N/A

Pomaderris forrestiana	Long-Flower Cryptandra	Rare	N/A
Ptilotus symonii	Symon's Mulla Mulla	Rare	N/A
Santalum spicatum	Sandalwood	Vulnerable	N/A
Spyridium tricolor	Rusty Spyridium	Vulnerable	N/A
Templetonia battii	Spiny Templetonia	Rare	N/A

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

Weeds, Plants and Pathogens

Provide information of the extent the area is affected or potentially affected by pathogens and weeds (e.g. *Phytophthora*, Buffel grass).

Invasive weed species have been identified within the 'Nullarbor Bioregion' and they include African Boxthorn, African Love Grass, Bathurst Burr Salvation Jane and Wild Mignonette. The locations where these species were identified are unknown and may or may not be present within the area of exploration.

A review of GIS information available on the DEWNR website does not reveal any documented occurrences of Weeds of National Significance, or buffel grass, in the areas relevant to the exploration program. Buffel grass is, however, reported to be occurring in the immediate vicinity of the new Eyre Highway. As all vehicle movements will be on existing tracks the risk of buffel grass migration by exploration activities is considered extremely low.

Fauna

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

The Nullarbor plain has 195 fauna species identified within the region that can be common to near threatened. Some of the more common native species viewed in the field include the Southern Hairy-nosed Wombat (Lasiorhinus latifrons), Western Grey Kangaroo (Macropus fuliginosus), Red Kangaroo (Macropus rufus), Dingo (Canis lupus dingo), Sleepy Lizard (Tiliqua rugose), Western Bluetongue (Tiliqua occipitalis), Peninsula Brown Snake (Pseudonaja inframacula), Carpet Python (Morelia spilota), Brown Falcon (Falco berigora), Nullarbor Bearded Dragon (Pogona Nullarbor), Wedge-tailed Eagle (Aquila audax), Red-capped Robin (Petroica goodenovii) and Australian Magpie (Gymnorhina tibicen).

Feral species include the Rabbit (Oryctolagus cuniculus), the domestic cat (Felis catus), Feral dog (Canis lupis), Fox (Vulpes vulpes) and One-humped Camel (Camelus dromedaries).

Significant Fauna

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 where possible. Include known sightings of listed species on a locality plan/map.

Species	Common Name	NPW Act rating	EPBC Act rating
Acanthiza iredalei	Slender-billed Thornbill	Rare	N/A
Ardeotis australis	Australian Bustard	Vulnerable	N/A
Cacatua leadbeateri	Major Mitchell's Cockatoo	Rare	N/A
Cinclosoma castanotum	Chestnut-backed Quailthrush	Rated at ssp level	N/A
Ctenophorus maculatus	Spotted Dragon	Rare	N/A
Diomedea exulans	Wandering Albatross	Vulnerable	Vulnerable
Falco perigrinus	Peregrine Falcon	Rare	N/A
Haematopus longirostris	Pied Oystercatcher	Rare	N/A
Macronectes giganteus	Southern Giant Petrel	Vulnerable	Endangered
Macronectes halli	Northern Giant Petrel	N/A	Vulnerable
Leipoa ocellata	Malleefowl	Vulnerable	Vulnerable
Lerista baynesi	Speckled Slider	Rare	N/A
Lichenostomus cratitius	Purple-gaped Honeyeater	Rated at ssp level	N/A
Lichmera indistincta	Brown Honeyeater	Rare	N/A
Pterodroma mollis	Soft-plumaged Petrel	N/A	Vulnerable
Strepera versicolor	Grey Currawong	Rated at ssp level	N/A
Morelia spilota	Carpet Python	Rare	N/A

Northiella haematogaster	Bluebonnet	Rated at ssp level	N/A
Thalassarche cauta cauta	Shy Albatross	N/A	Vulnerable
Thalassarche melanophris	Black-browed Albatross	N/A	Vulnerable
Turnix varius	Painted Buttonquail	Rare	N/A

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

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 ☐

This stage of the Coompana Drilling Program will involve drilling operations at three to six locations within the Nullarbor Wilderness Protection Area for scientific research purposes. The NWPA was chosen for its biological significance to protect the ecosystems and the species within them, scientific significance to conduct research and cultural significance to maintain cultural practices. All drill sites have be visited in the field to assess factors such as the suitability in relation to topography and vegetation type and density. Drillhole positions can be adjusted readily without compromising the aims of the research.

The existing homestead of Koonalda and the nearby Koonalda Caves are both listed on the State Heritage Register and the Koonalda Caves on the National Heritage Listing (NHL106022). Koonalda Homestead is a prime example of a World World II built remote pastoral station, created through basic and recycled materials. The station and associated infrastructure (Shearers Quarters, Sheep Yards etc.) are all part of the heritage listing. The Koonalda Caves have geological, aboriginal and speleological significance, as it is a network of large karst limestone caves that contain unique species of the fauna and flora and dated aboriginal art. There are many caves within the NWPA and have significance to people of the Far West Coast Group and various speleological organisations.

The proposed holes and NWPA are shown in Plan 1.

Are you likely to impact on the environmentally sensitive area? If Yes, detail the likely effects the proposed program may have.	Yes ☒	No ☐

The principal impact of the drilling operations in the NWPA will be the movement of vehicles and equipment onto the drill pads. In order to reduce impact and protect flora, all drill pads will not be cleared prior to drilling. Vegetation will only be removed if required for access of equipment or operations by the drilling personnel. All sites will be accessed through existing tracks eliminating the creation of new tracks. It should be noted that whilst provisions are being made in this PEPR document for six drill sites, it is likely that only three to four sites will actually be required, owing to budget constraints.

Likely effects of the program may include:

- Short-term, localised compaction of grassland and underlying soil in well-defined localities where drill pads are established.
- Possible increased susceptibility to erosion of fine soils, where drill pads are established and along existing tracks.

Every effort will be taken to minimise the environmental disturbance associated with the proposed drilling program with strict supervision of drilling operations. In this regard, specific protocols and control measures are outlined in Section F of this document. Full rehabilitation of the sites will occur as per statutory requirements, in consultation with DEWNR and utilising best practice methods.

A camp locality may be situated at the existing Koonalda Pastoral Station, to utilise any existing cleared land. The program intends to have no impact to either the Koonalda Pastoral Station or Koonalda Cave site.

SECTION D – DESCRIPTION OF PROPOSED EXPLORATION OPERATIONS

Equipment and personnel requirements

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

Type of Personnel	Number	Name of Contractor (if applicable)
Geologists	3-4	GSSA/GA
Land Access/Environmental	1	(Drill Coordinator will assume role of Liaison Officer)
Field Assistants/Technicians	2	GSSA Technical Staff
Drilling Crew	12-13	To be determined
Rehabilitation (earthmoving)	1	To be determined
Other (provide details)	1-2	*Staff from various Research Organisations/GSSA (periodic)*

Shifts worked per Day	Hours worked per day	Days worked per week
Drilling operations will operate on double shift.	Typically 12 hours per shift	Seven

Equipment	Owner/Operator	Description/Capacity	Activity/Purpose
Grader	To be Determined (TBD)	*Likely Cat12H or smaller*	*May be required to refurbish access tracks*
2X Drilling Rig – Reverse Circulation (RC)	TBD	*Likely to be an 8 wheel drive, truck mounted Schramm T685WS or equivalent.*	*To provide reverse circulation drilling to approximately 200m.*
2X Drilling Rig – Diamond Coring	TBD	*Likely to be an 8 wheel drive, truck mounted UDR1000.*	*To provide diamond drill core samples.*
Drill Rod Truck	TBD	*Likely 6 or 8 wheel drive, flat-bed support truck.*	*Carrying additional drill rods/supplies.*
2X Support Truck	TBD	*Likely 6 or 8 wheel drive, flat-bed support truck.*	*Carrying fuel/water/supplies/consumables*
2X Drillers Light Truck	TBD	*Likely to be a 4WD, dual cab light truck.*	*Facilitate drill crew commute and carry light supplies daily.*
2X Solids Recovery Unit (SRU)	AMC (Imdex Limited)	*A self-contained, trailer-mounted unit, towed by a light truck, or skid-mounted unit.*	*Used to re-circulate drilling water and collect cuttings during diamond drilling/mud rotary operations.*
Vacuum Truck or Tip Truck	TBD	*A 8 wheel heavy rigid truck with a 10,000L tank or 10t Tip Truck*	*Remove drill cuttings from site*
Forklift/Manitou	TBD	*Rubber tyred, small forklift.*	*Will be based at the laydown yard to assist with movement of bulk consumables and core trays.*

Provide any additional information if required.

A pre-collar drill rig may not be required if a multi-purpose drilling rig that can perform hammer drilling, mud rotary and diamond drilling, suitable to purpose, can be sourced.

4WD vehicles will be involved in field activities for the full duration of the program (i.e. from initial reconnaissance trips, pre-drilling geophysics through drilling, and up to rehabilitation stage). All vehicles associated with the drill program will be required to limit movements to existing tracks.

Low Impact Exploration Activities

Will low impact exploration activities be conducted that are not covered by the Generic PEPR for Low Impact Exploration Activities in South Australia (http://minerals.dmitre.sa.gov.au/publications_and_information/ministerial_determinations)? If Yes, describe each low impact activity.	Yes ☒	No ☐

A number of pre-drill geophysical techniques will be conducted to assess the cover unit thickness, depth to basement and attempt to identify any large cavities. This will include active and passive seismic, magnetotellurics and micro gravity surveys. This will be completed at three high priority holes only.

The passive seismic technique uses 15 seismometers (roughly the size of a shoe box) arrayed in a spiral pattern around the proposed drill site (see Section G). These seismometers are deployed by shallowly burying them and then being left to record for ~ 24 hours. This is a passive technique, using distant earth quakes to measure the velocity profile of the earth beneath the recorders. Each seismometer is shallowly buried just beneath the surface, requiring an auger hole of no more than 50 cm deep. This is a passive technique; no other ground disturbance is required. No vegetation clearance is required and no specific safety hazards are present.

Active seismic is similar to passive seismic, except rather than the source being from earthquakes and existing seismic waves travelling through the earth, it is created by hitting a 30x30cm metal plate on the ground with a tow-ball mounted hydraulic ram (see Section G). Geophones are pushed into the ground and connected by cables to a data logger (see Section G). This data will help determine the location of caves as waves can't travel through air. All locations where the metal plate impacts the ground will be rehabilitated on completion. All activities will be covered by a procedure to ensure personnel are not impacted by the active source mechanism.

Magnetotellurics is another passive geophysical technique which measures the conductivity of the earth's crust. This deployment will use 2 instruments. Each instrument consists of 1 logger box, 3 electrodes, and a series of cables. It is a very low impact device, and requires 4 small holes to be dug in order to install (see Section G). The equipment needs to be placed on the ground with cables to the electrodes going out 50 m in a north and east direction. The three electrodes each need to be planted in a small hand dug hole, measuring approximately 5cm in diameter and 20 cm deep. Deployment at each site will consist of two six hour deployments around the proposed drill site. This is also a passive geophysical technique meaning no other ground disturbance is required. There is no need for any vegetation clearance.

Microgravity involves placing a gravitometer on the ground and taking a measurement (see Section G). It records the acceleration due to gravity of the earth, which is altered slightly by dense bodies. There is no vegetation clearance or ground disturbance required and no major hazards associated with this task.

Drilling Activities

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

EL	Drilling type	Drill hole size (mm)	Max. No. of drill holes	Max. drill hole depth (m)	Max. No. of sumps required at each site	Max. size of sumps (LxDxW m)	Average footprint of each drill pad (m^2)	No. of sites requiring pad excavation	Average volume of material to be excavated (excluding sumps if applicable)
Section 15	Hammer Drilling	125-146mm TBD	6	300m	0	N/A	(20x35m) =700m^2	0	N/A
Section 15	Mud Rotary	125-146mm TBD	6	800m	0	N/A	(20x35m) =700m^2	0	N/A
Section 15	Diamond Core	HQ3 (96.0mm) NQ2 (75.7mm)	6	1,000m	0	N/A	(20x35m) =700m^2	0	N/A
TOTAL			6	6,000m	0	N/A	4,200m^2	0	N/A

Drill site preparation

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

There will be flexibility on a localised scale to position the drill collars as the geological targets are broad. Microgravity surveys will aid in locating caves and sink holes, thereby moving the collar to avoid such sites. Drill

collars will be placed on the flattest terrain possible, eliminating the need for excavation and levelling of the terrain.

All sites chosen will have minimal shrub and tree vegetation eliminating the need for mechanised vegetation clearing. This includes drill sites in the south that are within low mallee woodland. Any shrub or tree removal/adaption will be done by handsaw to ensure re-growth can occur and roots remain intact. Vehicles will simply drive over the in situ grasses and low chenopod shrubs to the designated drill sites. This will have two main benefits, being:

- compressed in situ vegetation will help avoid excessive surface wear of tracks and reduce the amount of rehabilitation work required.
- by leaving all grass and chenopod vegetation in situ, rootstock and seeds will be left undisturbed, thus aiding eventual regeneration.

Designated drill pads areas will be delineated to the dimensions stated in the table above and traffic management systems implemented to ensure vehicle movements stay within the designated areas.

A solids recovery unit (SRU) will be utilised during the program, thereby no in-ground sumps will need to be excavated. In addition, skip bins or tanks will be required to contain cuttings from the mud rotary and diamond drilling operations. Groundwater information suggests that no sumps will be required to capture water from the borehole.

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.

The drillholes will be constructed using two levels of steel casing, based on stratigraphy. The initial steel casing will be installed after both of the Tertiary limestones have been intersected. This will ensure no fluids enter the cavernous limestone formations. The second level will be installed after all sediments from the Eucla, Bight and Denman basin have intersected and crystalline rock has been reached. There is no intension to cement the casing in the hole.

All drilling operators conducting the grouting and casing operations will be trained in constructing multiple aquifer production bores through a certified nationally recognised course.

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.

Both levels of steel casing will be retrieved, or attempted to be retrieved, at the conclusion of drilling. If casing cannot be retrieved the casing will be cut and abandoned as per M21 guidelines and within timeframes set forth by this PEPR.

If coarse sandstones of the Loongana Formation are intersected, then the formation will be grouted with a cement plug that extends 15m above and below the interval (as per M21 guidelines). It is most likely that a neat cement slurry will be the material used to construct the cement plug post drilling. There is a low risk of groundwater interacting with aquifers above the Madura Formation as it contains swelling clays, which will block the hole and act as an aquitard post drilling.

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 ☒

N/A

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, etc.). Include requirements for on-site geological sample management (splitting of archive samples, bag farms, core processing and storage).

The drilling method in essence is a pre-collar of hammer drilling and mud rotary methods to reach crystalline basement followed by diamond drilled cored tails.

Drill chips will be collected from surface and distributed in rows via a wheelbarrow. Samples will be collected in 2m increments into plastic bags to contain the sample and allow it to be poured back down the hole shortly after the conclusion of drilling. Sub samples may or may not be taken for chemical analysis and will be collected via calico bags or plastic trays. Due to the cavernous nature of the limestone, it is highly likely that sample return will be poor or lost for the majority of the hammer drilling. A geologist will prescribe the sampling process, log the chips and monitor the length of hammer drilling. From previous drilling and geological logs, hammer drilling will be contained to the limestone lithologies and be in the order of 150-200m. Shortly after the conclusion of drilling, sample material will be placed back down the hole and no cuttings will remain on the surface.

Mud rotary drilling will produce a 2m sample that will be placed into plastic bags and distributed in rows via a wheelbarrow. Sub samples may or may not be taken for chemical analysis and will be collected via calico bags or plastic trays. Due to the large amount of cuttings generated from mud rotary drilling, a dedicated bin or tank is required. All sites where bins or tanks are located will be rehabilitated, along with the pads post drilling. A geologist will prescribe the sampling process, log the chips and determine and monitor the length of the mud rotary drilling. From previous drilling and geological logs the mud rotary section of the hole will be anywhere between 100-400m. On conclusion of the drilling, sample material will be removed from site, either by a vacuum truck or by bin/tank removal.

Conventional diamond coring will be conducted after mud rotary drilling and either be all HQ, or a combination of HQ and NQ, depending on ground conditions. Core will be placed into core trays and either be logged at site or taken to a designated local core farm (likely at Border Village or existing camp) for logging, etc., before later being transported back to Adelaide. All core cutting will be conducted in Adelaide.

A solids recovery unit (SRU), will be utilised during the entire diamond drilling process. The SRU represents an industry 'best-practice' approach in that it captures all drill cuttings and fluids leaving the hole, and recycles fluids for further use. Solids are captured in an above-ground tank, thereby avoiding the need for conventional in-ground sumps.

Upon completion of each drill hole, the remnant sludge from the SRU will be disposed of at one of the following places in order of priority and subject to approvals:

- A borrow pit along the new Eyre Highway that has been approved by the Department of Transport and Infrastructure (DPTI) and excised from the NWPA (see photos in section G).
- Any pit located within the Nullarbor Regional Reserve that has been approved by DEWNR.
- Any existing pit/s along the old Eyre Highway that has been approved by DEWNR (see photos).
- The approved waste facility at Eucla, subject to the granting of a Quarantine Import Permit.

An existing quarry site at Nullarbor, excised from the NWPA and owned and operated by DPTI, has been identified as a suitable location. Discussions have commenced with DPTI in regards to the use of that facility as well as any excised road base pits along the new Eyre Highway. Discussions have commenced with the Shire of Dundas and WA Quarantine to dispose of material at the licenced facility at Eucla. No new pits will be excavated to dispose of cuttings.

If an existing pit is used, the cuttings will be covered with topsoil or any other suitable excavated material available and the site rehabilitated as per M33 guidelines.

Access Routes to Work Areas

Will access off existing tracks be required? If Yes, detail the method(s) for gaining access and if vegetation clearance is required. Include the total area of disturbance (includes drill traverses and seismic lines) required off existing tracks (i.e. length (km) and width (m) of new tracks).	Yes ☐	No ☒
Existing tracks will be utilised to avoid any ground disturbance when accessing sites.		
Will existing tracks require upgrading and/or maintenance? If Yes, detail the work required to upgrade/maintain existing tracks.	Yes ☒	No ☐
It is not anticipated that existing station tracks will require a significant amount of upgrade works prior to the drilling program commencing. It is, however, anticipated that the track network will require periodic ongoing maintenance work, given the movement of heavy vehicles and the fact that drilling will be taking place during the late-Autumn/Winter months. It is expected that maintenance work will largely be confined to re-grading activities and be completed in full consultation with DEWNR and the FWCAC.		

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

Camp Sites, Storage and Equipment Laydown Areas

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

Camp Site Details		
Is a camp site required? If No, no further information is required.	Yes ☒	No ☐
What is the maximum number of personnel the camp site will accommodate?	20	
What will be the total area of vegetation clearance for the camp site?	0 ha	
If vegetation clearance is required, describe the methods used to prepare the site?		
No vegetation will need to be cleared in order to establish camp facilities and modification (tree trimming) may be required. It is intended that the camp facilities will be located at either Border Village, the existing Koonalda Homestead or the Department of Planning, Transport and Infrastructure Site camp where cleared areas have already been established (as shown on Plan 1 attached).		
What will be the total area of disturbance for the camp site(s)?	0 ha	
Will any excavations be required? If yes, describe the purpose of the excavation and the maximum volume of material to be excavated (m^3)	Yes ☐	No ☒
N/A		
Will the proposed ablution facilities be endorsed/approved for use by the Department of Health or local council (where applicable)? If no, provide a reason?	Yes ☒	No ☐
The proposed ablution facilities will utilise any existing facilities (septic systems/toilets) or be portable trailer-mounted facilities (e.g. 'portaloo', ablution tanks). Sewerage will be disposed of at either Border Village or a septic system, subject to acceptance and negotiations. Grey water will be conveyed to earth drains, constructed specifically for that purpose.		

Proposed infrastructure (includes hydrocarbon and water storage requirements)	**Quantity**	**Description/Capacity**
Bulk water storage	1	Tank to hold fresh water, of approx. 20,000L capacity
Generator	1	32kvA trailer mounted generator.
Cool Room	1	2m^3 refrigerated cool room, trailer mounted.
Caravans	6-7	Likely 4 berth caravans for accommodation, site office, kitchen/ablutions
Portable toilet	2	Supplement existing toilet facilities with a portaloo.
Provide a description and justification of the camp location (e.g. previously cleared areas etc.), and any other relevant information if required.		

It is anticipated that the camp sites at Border Village, Koonalda Homestead or an existing DPTI facility will be used for this stage of the CDP. The State Heritage department of DEWNR has been contacted regarding using Koonalda as a camp facility and they are agreeable to the notion. Koonalda does have a pit toilet that could be used, subject to pumping out at the end of the program and cleared areas suitable for a camp location. Discussions will continue with the owners of the infrastructure, with the preferred option being the DPTI facility. Facility usage is subject to any commercial negotiations and arrangements. All camp infrastructure will be trailer mountable or portable including accommodation and ablution facilities (caravans/portaloos) as listed above. No earthworks or vegetation clearing will be conducted and the laydown will be placed in an existing clearing. All general waste will be taken to the licenced facility at Eucla for disposal.

Laydown Area Details		
Will laydown areas be required? If No, no further information is required.	Yes ☒	No ☐
Will the laydown area(s) be located at the same location as the camp site?	Yes ☒	No ☐
What will be the total area of vegetation clearance for the camp site?	0 ha	
If vegetation clearance is required, describe the methods used to prepare the site?		
Existing flat, clear land in the vicinity of Border Village, Koonalda Homestead or the DPTI yard will be used as a laydown area.		
What will be the maximum area of disturbance (ha) for the laydown area(s)?	0 ha	
Will any excavations be required? If yes, describe the purpose of the excavation and volume of material to be excavated (m^3)	Yes ☐	No ☒

Proposed infrastructure (includes hydrocarbon and water storage requirements)	Quantity	Description/Capacity
Core racks	6	Temporary core racking will be established to allow logging of drill core.
Bulk diesel storage	1	Self-bunded tank, of less than 25,000L capacity
Sea Container	1	10m long sea container to store equipment

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

Existing flat, cleared land in the vicinity of any chosen camp site will be used as a laydown area. All localities will need to be inspected, to determine areas that are applicable for a laydown. If necessary, the area will be demarcated by pegs and/or tape to ensure the overall size is constrained. All hydrocarbons will be contained and located on bunded pallets. All areas will be separated from the public and will be signposted no unauthorised entry if accessible by the public.

Water Supply and Management

Will camp and/or drilling water be required? If Yes, describe how and where camp or drilling water will be sourced (e.g. groundwater, surface water, mains, etc.), and provide details on the volume of water required and how waste water or runoff water will be managed.	Yes ☒	No ☐

Water will be required for both camp and drilling purposes. However, they can come from different sources as drilling water can contain a high level of Total Dissolved Solids (TDS).

Preliminary discussions have already been held with DEWNR staff regarding the potential to source drilling water from bores within the NWPA and NRR. Bores have been located along the new Eyre Highway, with many of them blocked, however further testing is required. KN1, a previous exploration hole, located within the Nullarbor Regional Reserve at 567710E 6535055N (GDA 94) does contain water. This could be utilised for water if necessary and would only be used as a last resort if water sources to the south are depleted. Water would be extracted via a downhole submersible pump to surface poly tanks with any overflow returned back down the bore. Water would only be extracted from sources in consultation with DEWNR, and could be managed in such a way as to ensure there is minimal impact to the environment and any park operations.

Another potential source is utilising a borehole/s as part of this drill program. Water would only be extracted for drilling purposes and be rehabilitated as per M21 guidelines. Water would be extracted via the method detailed above and in consultation with DEWNR. All water extraction sources and operations will be supervised to ensure the extraction site and water runoff is managed.

The quantity of water required will depend on drilling conditions, however, it is not expected to exceed 30,000L per day, per rig at a maximum.

There is drilling and potable water available at Border Village and Eucla that could be sourced subject to suitable commercial agreements. Discussions will be held in due course in regards to accessing these potential water supplies. These localities will be utilised for camp water that is potable. It is anticipated that camp water requirements would not exceed 20,000L a week. These operations are managed by the owners of the infrastructure in those locations.

As previously discussed above, drilling water will be captured, recycled and managed at the rig via a Solids Recovery Unit (SRU). This will help minimise water loss that would otherwise occur at the surface if in-ground sumps were used. Additionally, spare water tanks will be available at the rig for additional water reserves.

Camp ablution facilities can be managed via on-site infrastructure and/or portable infrastructure if available. Camp waste water will either be removed via portable tanks or seepage drains will be constructed on site. Border Village does have septic tanks and an RV dump facility. If feasible, items such as portable toilets and septic tanks can be pumped out by licenced contractors and disposed of at an approved waste facility.

If surface water will be used as a water source and/or if mineral drill holes will be used as a water supply well, is a licence for water extraction/usage required (refer to relevant NRM Water Allocation Plan - http://www.environment.sa.gov.au/managing-natural-resources/water-use/water-planning/water-allocation-plans)? If Yes, attach a copy of the licence. Where a licence has not been obtained, include a statement confirming a licence will be obtained before the extraction and/or usage of water.	Yes ☐	No ☒

All water extraction will be conducted in consideration to the Alinytjara Wilurara Regional National Resource Management Plan, to ensure only necessary water is extracted. The groundwater system is poorly understood therefore all water extracted will be monitored and volumes recorded. Boreholes, either existing or created through the program will be monitored through water dipping to ensure extraction is sustainable. All data collected can be passed onto DEWNR and the FWCAC to enhance the knowledge of groundwater in the area.

Groundwater and drilling investigation activities

Will any water bores be required and/or water investigation activities (e.g. pump testing, water monitoring sites, water storage, turkey nests/dams) be conducted? If yes, describe the water drilling and investigation activities, including site preparation, vegetation clearance, and safety and maintenance requirements.	Yes ☒	No ☐
Water bores will be existing (i.e. DPTI bores) and chosen to source water close to the drillhole. Exploration holes as part of the program may be used to extract water and rehabilitated to M21 guidelines. The site will be prepared by utilising any existing tracks or cleared areas and designating a route for the operator to access the site. No vegetation will be cleared, and if necessary, the water truck will drive over existing vegetation to establish a track. A submersible pump, with a safety wire, will be installed in the bore carefully and tied off securely before any extraction operations. Tanks will be installed on flat ground with overflows directed back into the hole to ensure there is no runoff from the site. All generators will be well maintained and inspected regularly to ensure there are no leaks. The bore will be dipped regularly and recorded, to ensure extraction is sustainable.		
If water bores are to be drilled and/or groundwater investigation activities are to be conducted, indicate if well permits have been obtained and whether or not a water extraction licence is required in accordance with the NRM Act. If yes, attach a copy of the permit(s)/licences. If no, include a statement confirming that permits/licences will be obtained prior to commencement of water investigation activities.	Yes ☐	No ☒
If well permits are required, they will be obtained prior to the water bore activities. An extractive licence is not required.		

Water affecting activities

Will any water affecting activities (refer to s. 127 of the NRM Act) be undertaken? If yes, attach a copy of the permit. If a permit has not been obtained, include 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		

Other Exploration Methods and/or Ancillary Activities

Are any other proposed exploration methods (e.g. seismic) and/or ancillary exploration activities required? If Yes, describe the activity(s), site preparation, vegetation clearance, and safety and maintenance requirements.	Yes ☒	No ☐
It is likely that various forms of conventional downhole wireline logging will be conducted on the completed drillholes. This may be conducted using the rod string and/or wireline system on the drill rig, or be a separate 4WD vehicle post drilling. Once all surveys have been conducted the hole/s will be rehabilitated and abandoned as per MG21 guidelines. If multiple and/or confined aquifers are intersected, the hole will be cased according to the guidelines to prevent cross-flow contamination. This will be conducted within the rehabilitation timelines set by this PEPR approval. DEWNR will be consulted in regard to retaining the proposed drillhole/s for the duration as outlined above. Any concerns raised, will be addressed and management protocols will be put in place in conjunction with the rangers, for aspects such as maintaining ongoing access to the site, and keeping the rangers informed of any visiting parties.		

Management of Hazardous Materials

Will activities be conducted in areas of known Uranium and Thorium mineralisation? If Yes, attach a Radiation Management Plan and confirmation of endorsement of the plan by the Environment Protection Authority (EPA).	Yes ☐	No ☒
Will any other hazardous material be encountered when exploring in the area? If Yes, list the types of hazardous materials and provide a management plan on how these materials will be managed.	Yes ☐	No ☒
No hazardous materials are expected, but whenever drilling crystalline rock, asbestiform minerals are a very small probability. Procedures will be in place and equipment on site to manage the hazard in the highly unlikely event it is intersected.		

SECTION F – MANAGEMENT OF ENVIRONMENTAL IMPACTS

Use the table below (instructions provided) to identify all of the environmental, social and economic potential impact events that are likely to occur as a result of the proposed exploration activities, and how each of the identified impacts will be managed. Identified potential impacts events should be developed based on the proposed operational details and description of the environment and must have corresponding outcomes, measurement criteria and a monitoring plan.

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. Please note that some potential impacts are applicable to all programs.
2. For each applicable Potential Impact (and corresponding receptor), describe control and rehabilitation 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 and rehabilitation strategies address the potential impact (i.e. reduce the risk to an acceptable level). 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.

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

Receptor *Note: Lists are not exhaustive.*	Potential Impacts *Note: Lists are not exhaustive*	Is the Potential Impact Applicable (Yes or No) *Note: some potential are applicable to all programs*	Control and rehabilitation strategies *Note: Where the risk is not considered low after implementing control and rehabilitation strategies, provide justification that the risk is acceptable, or consider additional strategies to reduce the risk to an acceptable level (refer to MG22 Guidelines for more information)).*	Impact Assessment			Outcomes	Outcome Measurement Criteria (includes Monitoring Plan)
				LH	CQ	Risk		
Stakeholders: • Freehold land owners • Perpetual Lease holders • Pastoral Lease holders • Aboriginal Land (APY or MT Lands) • Department of Defence • State Government Departments. • Local Government (Councils) • Federal Government • Native Title Parties	Interference to: • Existing or permissible land use (includes loss of income). • Buildings, structures, existing tracks or other infrastructure. • Aesthetic values of an area. Non-compliance with legislative requirements.	Yes *(applicable to all programs)*	- Commence early consultation (phone and face to face discussions) with key DEWNR staff to explain scope of program, and to ascertain areas of concern. - Meet with DEWNR staff at an agreed frequency, to discuss the drill program. - Have one designated landholder liaison officer for resolution of any issues. - Drill holes will be situated well away from infrastructure and watering points (i.e. >500m). - All holes will be sited well away from any known caves. - Site drill holes at least 1km from any residence. - Water for drilling to only be sourced from sites and in quantities approved by DEWNR staff. - All vehicle movements will be restricted to established tracks. - Vehicle speed limits will be imposed to reflect local road conditions and the proximity to any infrastructure or environmentally sensitive areas. - Planning and coordination will be used to minimise the number of individual vehicle movements. - Initial rehabilitation of the pad will occur after drilling and full rehabilitation will take place after project completion. - During the program resources will be in place to conduct periodic maintenance on park tracks impacted by increased traffic flow. - The condition of existing tracks will be remediated to the satisfaction of DEWNR upon completion of the program. - Conduct early engagement (phone and face to face discussions) with the Far West Coast Native Title Holders, as to the proposed work plan and potential	*2*	*B*	*L*	Stakeholders are fully informed and satisfied with the proposed methods used to conduct exploration activities on their land. Tracks and existing infrastructure affected by this program are maintained to the condition that they originally were in prior to exploration commencing.	Provide the information requested within the '*Complaints'* section of the 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. Provide photographic evidence of tracks and infrastructure prior to and post exploration, to prove they were maintained to original levels, within the Exploration Compliance Report.

Receptor *Note: Lists are not exhaustive.*	Potential Impacts *Note: Lists are not exhaustive*	Is the Potential Impact Applicable (Yes or No) *Note: some potential are applicable to all programs*	Control and rehabilitation strategies *Note: Where the risk is not considered low after implementing control and rehabilitation strategies, provide justification that the risk is acceptable, or consider additional strategies to reduce the risk to an acceptable level (refer to MG22 Guidelines for more information)).*	Impact Assessment			Outcomes	Outcome Measurement Criteria (includes Monitoring Plan)
				LH	CQ	Risk		
			issues/concerns they might have. Discuss and plan Heritage Clearances in areas to be disturbed. - Ensure that Aboriginal cultural practices are not impeded by exploration activities. - Conduct Aboriginal Heritage surveys for each proposed drill site and associated access routes. - "Dial Before You Dig" has been contacted and plans obtained of two fibre optic cables in vicinity of CP03 & CP13. Cables will be identified in the field and a minimum 50m offset will be applied to the drillhole.					
Stakeholder: • DEWNR	Interference to: • Existing or permissible land use. • Buildings, structures, existing tracks or other infrastructure. • Aesthetic values of an area. Non-compliance with legislative requirements	Yes *Applicable to programs located adjacent to or within parks and reserves*	- Commence early consultation (phone and face to face discussions) with key DEWNR staff to explain scope of program, and to ascertain areas of concern. - Meet with key DEWNR staff at an agreed frequency, to discuss drill program progress/issues. - Have one designated landholder liaison officer for resolution of any issues. - DEWNR will be provided with the appropriate notification forms, at least 10 business days prior to CDP staff entering into the NWPA. - Drill holes will be situated well away from infrastructure and water access points (i.e. >500m). - Site drill holes at least 1km from any residence. - Water for drilling to only be sourced from sites and in quantities approved by DEWNR staff. - Vehicle movements will be restricted to existing tracks only and all access to pads will be "dog-legged" off existing tracks. - Vehicle speed limits will be imposed to reflect local road conditions and the proximity to any infrastructure or environmentally sensitive areas. - Planning and coordination will be used to minimise the number of individual vehicle movements. - Initial rehabilitation of the drill pads will occur after each drillhole is completed and full rehabilitation will take place after project completion. - Have resources in place to conduct periodic maintenance on park tracks impacted by increased traffic flow. - The condition of existing tracks will be remediated to the satisfaction of the DEWNR staff upon completion of the program. - No drilling activities will take place, nor will any CDP personnel be within a drill pad on Catastrophic rated Fire Ban days. - No fires will be lit during any fire bans imposed on the district. - All bulk fuel will be stored in cleared areas, in appropriately bunded tanks. - All vehicles will be fitted with appropriate fire extinguishers and/or fire suppression systems. - Any tree trimming will be performed as per the recommendations provided by DEWNR staff.	*2*	*B*	*L*	For activities located within or adjacent to Regional Reserves, National, Conservation & Marine Parks only: No unauthorised interference with park management activities. Tracks and existing infrastructure affected by this program are maintained to the condition that they originally were in prior to exploration commencing.	Provide confirmation that: • Park access notification forms were submitted to DEWNR and the Department of State Development at least 10 days prior to entry into Regional Reserves, National, Conservation and Marine Parks. Provide photographic evidence of tracks and infrastructure prior to and post exploration, to prove they were maintained to original levels within the Exploration Compliance Report. Provide the Exploration Compliance Report to DEWNR to ensure outcomes are met to their satisfaction.

Receptor *Note: Lists are not exhaustive.*	Potential Impacts *Note: Lists are not exhaustive*	Is the Potential Impact Applicable (Yes or No) *Note: some potential are applicable to all programs*	Control and rehabilitation strategies *Note: Where the risk is not considered low after implementing control and rehabilitation strategies, provide justification that the risk is acceptable, or consider additional strategies to reduce the risk to an acceptable level (refer to MG22 Guidelines for more information)).*	Impact Assessment			Outcomes	Outcome Measurement Criteria (includes Monitoring Plan)
				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 *Applicable to exploration programs located within or impacting on native vegetation*	- Interrogate relevant SA Govt. GIS databases to become familiar with significant flora and fauna species in the drilling area. - Information on significant species in drilling area will be included in staff inductions and control measures as part of this PEPR mentioned at toolbox meetings. - Vehicle movements will be restricted to existing tracks. - Initial planned drillhole locations to be inspected in the field during the reconnaissance phase – hole locations to be modified if the site is located within dense vegetation (e.g. if within an isolated stand of trees, move to adjacent grassland) or above a cave structure. - Drill sites will be located in naturally cleared areas where possible, clearly demarcated with pegs and tape and with input from DEWNR staff. - New drill pads will be constructed by driving across unprepared ground to retain root stock and minimise potential for erosion. - Initial rehabilitation of the drill pads will occur after each drillhole is completed and full rehabilitation will take place after project completion. - Fires for warmth will only be approved in pre-designated locations (e.g. camp fireplace, or in contained vessels, such as drums). Adequate firefighting equipment will need to be at hand. - No fires to be lit on fire ban days. - Hot-work permit system to be used for activities such as welding, grinding, oxy cutting. - No drilling activities will take place, nor will any CDP personnel be within a drill pad on Catastrophic rated Fire Ban days. - All camp localities and laydown will be at least 500m from any environmentally sensitive areas and if necessary, clearly demarcated. - All bulk fuel will be stored in cleared areas, in appropriately bunded tanks with a fire extinguisher. - All vehicles will be fitted with appropriate fire extinguishers and/or fire suppression systems. - Any tree trimming will be performed as per the recommendations provided by DEWNR staff.	*2*	*B*	*L*	No permanent loss/modification of native flora and fauna populations and their habitats through: • clearance, • fire, • other, unless prior approval under the relevant legislation is obtained.	Maintain before, during and after photographic evidence of all exploration sites (e.g. drill sites, new track exit/entry points off existing tracks, costeans, camp sites, etc.) demonstrating: • That the area and method of disturbance is consistent with that described in the PEPR. • No [1]uncontrolled fires occurred as a result of exploration activities. . Representative photos to be included within the Exploration Compliance Report.

[1] Uncontrolled = no fires escape outside of work area (e.g. drill site).

Receptor *Note: Lists are not exhaustive.*	Potential Impacts *Note: Lists are not exhaustive*	Is the Potential Impact Applicable (Yes or No) *Note: some potential are applicable to all programs*	Control and rehabilitation strategies *Note: Where the risk is not considered low after implementing control and rehabilitation strategies, provide justification that the risk is acceptable, or consider additional strategies to reduce the risk to an acceptable level (refer to MG22 Guidelines for more information)).*	Impact Assessment			Outcomes	Outcome Measurement Criteria (includes Monitoring Plan)
				LH	CQ	Risk		
All flora, especially listed species.	Loss/modification of the environment (biological, social and economic) through the introduction of weeds and pathogens.	Yes *(applicable to all programs)*	- Interrogate relevant SA Govt. GIS databases to determine presence and extent of current weed infestation. - Make observations of current weed presence and distribution during the reconnaissance phase. - Any new earthmoving equipment to be brought on site is to be thoroughly washed off-site first. A visual inspection for introduced mud/soil is to be made by DSD personnel, prior to machinery operation. - All new vehicles entering the program area, or vehicles re-entering the program area after travelling on other unsealed roads, are to be clean and visually inspected. - Risk of weed introduction to be discussed with all new personnel coming to site as a part of induction process. - Risk of weed introduction is to feature as a periodic topic at weekly toolbox safety meetings. - Rehabilitated sites are to be revisited. If weed infestation or increase in abundance of pre-existing weeds is noticed, selective spraying is to occur.	*2*	*B*	*L*	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 Exploration Compliance Report, confirming that: • Vehicle logs were kept during the exploration program, demonstrating that all vehicles are clean and free of plant and mud material prior to entering [2]properties within the exploration licence(s) areas, unless otherwise agreed to with the relevant landholders. • 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 flora and fauna	Entrapment of fauna through open drill holes and excavations.	Yes *Applicable to exploration programs that involve drilling and/or require excavations.*	- The use of a Solids Recovery Unit (SRU) during drilling means that there will be no need for excavated sumps. - PVC collars will be installed at all drillholes before the rig moves off the pad. All collars will have temporary plugs inserted immediately after drilling and concrete plugs shortly afterwards. - All drillhole collars that are no longer required for geoscientific purposes will be cut, plugged and buried as per M21 rehabilitation guidelines.	*1*	*A*	*L*	No fauna traps created as a result of exploration activities.	Maintain before, during and after photographic evidence of all drill holes and and/or excavations demonstrating that: • All drill holes were permanently or temporarily capped/plugged immediately upon completion. • No fauna and livestock became trapped in drill holes and/or excavations throughout the duration of the program. • All rehabilitation is completed within 3 months of expiry of the E-PEPR approval (for PEPRs approved for a period of 12 months), or 3 months after the expiry of a program notification (for PEPRs approved for an ongoing period) unless otherwise authorised. Representative photos are to be included within the within the Exploration Compliance Report. Pprovide the information requested within the '*Rehabilitation'* section of the Exploration Compliance Report.
Aboriginal heritage sites	Disturbance to Aboriginal heritage.	Yes *(applicable to all programs)*	- All proposed hole locations have been chosen to avoid any pre-existing Aboriginal heritage sites. Heritage information to be sourced from the Aboriginal Affairs and Reconciliation section of DSD. - Vehicle movements will be restricted to existing tracks. - All drill pads require a Heritage Clearance Survey will need to be completed before any ground-disturbing activities can occur.	*2*	*B*	*L*	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 Exploration Compliance Report demonstrating that: • Heritage sites were not impacted during the conduct of the exploration program, unless prior approval has been obtained under the appropriate legislation. • Work ceased on discovery of a significant site and recommenced only after authorisation.

[2] Properties = Freehold (cropping and grazing land), Perpetual/Pastoral Lease land, Council land, Regional Reserves, National, Conservation & Marine Parks, Aboriginal Lands, Commonwealth Land, etc.

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				LH	CQ	Risk		
			- All personnel will be informed of the possibility of Heritage sites existing, and the importance of not disturbing any such sites, during the induction process. - Heritage sites identified during the clearance survey process will be flagged in the field and avoided. Personnel will be notified of any heritage sites during the induction process, on maps, and at toolbox meetings, etc. - Any heritage sites identified during the surveys will be recorded on appropriate registers and reported to appropriate authorities. - Excavation activities will be avoided through use of an SRU at the drilling site.					• Aboriginal Heritage sites identified during the exploration program were appropriately recorded and reported to authorities if not previously known.
European heritage sites and sites of scientific and environmental significance	Disturbance to European heritage sites and sites of scientific and environmental significance (e.g. geological monuments, fossil reserves).	Yes *Applicable to exploration programs located close to or within European heritage sites and sites of scientific and environmental significance*	- Identify all heritage sites within the proposed area and research what is protected at each site. - All heritage sites will be mentioned in the induction and not to be entered unless there is prior approval of the Drill Coordinator. - Ensure that no damage occurs to any heritage or environmental significant site, through regular inspections. - All camp infrastructure and laydown equipment will be located at least 25m from any heritage listed building/infrastructure. - All high priority holes will have microgravity and seismic surveys conducted to locate any near surface caves.	*2*	*B*	*L*	No disturbance to European heritage sites and to sites of scientific and environmental significance unless prior approval under the relevant legislation is obtained.	Demonstrate no impact to heritage sites and sites of scientific and environmental significance by: • Maintaining evidence, including detailed maps showing sites compared to the location of exploration activities and photographic evidence of sites before and after the conduct of the exploration program. • Providing a statement within the Exploration Compliance Report confirming sites were not impacted during the conduct of the exploration program.

Receptor *Note: Lists are not exhaustive.*	Potential Impacts *Note: Lists are not exhaustive*	Is the Potential Impact Applicable (Yes or No) *Note: some potential are applicable to all programs*	Control and rehabilitation strategies *Note: Where the risk is not considered low after implementing control and rehabilitation strategies, provide justification that the risk is acceptable, or consider additional strategies to reduce the risk to an acceptable level (refer to MG22 Guidelines for more information)).*	Impact Assessment			Outcomes	Outcome Measurement Criteria (includes Monitoring Plan)
				LH	CQ	Risk		
Soils/vegetation	Soil/vegetation contamination (e.g. hydrocarbons, rubbish, drill samples/cuttings, ablutions, other sources, etc.).	Yes *(applicable to all programs)*	- All bulk diesel or other hydrocarbon/chemical storage is to be bunded in accordance with EPA guidelines. - Designated refuelling areas are to be appropriately bunded. - At least one large spill kit to be present at the drill rig, and another at any bulk diesel storage. - All personnel to be reminded in the induction of the need to clean up any small hydrocarbon spills, using shovels and green plastic bags. - Any hydrocarbon spills >5L are to be immediately remediated and reported. - All rubbish to be securely placed in bins or bags and disposed of at approved waste facility. - Rubbish, including putrescible waste, are not to be left in areas accessible to wildlife or vermin. - Compliance with zero-rubbish policy is to be measured through workplace inspections. - A port-a-loo will generally be available for use at each drill site. - Ablution facilities will be available at all camp sites (either already established facilities, or portable facilities). - Any excess drill cuttings will be disposed of at an approved waste facility, be returned back down the drillhole, or be buried in existing sumps or pits agreed to by DEWNR.	*2*	*B*	*L*	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 within 3 months after completion of the program, and that all fuel and chemicals are stored in accordance with EPA requirements, by providing: • The name, location and contact details of the authorised waste disposal facility. • A statement within the '*Compliance with Approved Programs'* section of the annual Exploration Compliance Report confirming domestic and industrial waste was removed from all exploration sites and disposed of at an authorised waste disposal facility. • Photographic evidence within the Exploration Compliance Report that all fuel and chemical storage facilities were managed in accordance with EPA requirements. Maintain photographs of all exploration sites and provide representative photos within the Exploration Compliance Report demonstrating that drill cuttings are either; • removed from site and disposed of at a licensed facility, buried under a minimum of 30cm of soil, or in accordance with EPA Radiation Management Guidelines, and/or backfilled down the drill hole, within 3 months of completion of the program. Pprovide the information requested within the '*Rehabilitation'* section of the Exploration Compliance Report.
Soils	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, etc.).	Yes *(applicable to all programs)*	- Vehicle movements will be restricted to existing tracks. - Impose speed restrictions on all tracks to minimise damage - Utilise existing cleared and well trafficked areas for camp and laydown yards. - Use a SRU to minimise the need to excavate a sump. - Site drillholes on flat ground and drive over existing vegetation to keep rootstock intact to prevent erosion. - Conduct initial rehabilitation, i.e. scarifying shortly after drilling to aid revegetation before any rainfall. - Work collaboratively with DEWNR in regards to rehabilitation practices. - Complete rehabilitation of new pads as per best-practice model – e.g. removing windrows, restoring original contours, lightly scarify where appropriate and replacing stockpiled topsoil and vegetation if applicable. - Restrict third party access to drill sites by "dog legging" access to the pad. Once rehabilitated, use signs and place any vegetation across the entry to restrict access.	*3*	*A*	*L*	Where soil disturbance occurs as a result of exploration activities, ensure that; • top soil quality and quantity is maintained • the soil profile and topography is reinstated to original conditions, and • there is no accelerated soil erosion.	Maintain before, during and after photographic evidence of all excavations, drill sites, camps, laydown areas and new tracks demonstrating that: • The soil profile and topography is reinstated to original conditions and is consistent with natural surroundings 3 months after completion of the program. • Where required, sufficient top soil is removed (depending on soil profile), stored separately from sub soil and reinstated (in the correct order) 3 months after completion of the program • There are no signs of accelerated soil erosion during and post rehabilitation of disturbed sites. • Representative photos to be included within the Exploration Compliance Report. Provide the information requested within the '*Rehabilitation'* section of the Exploration Compliance Report. Provide the Exploration Compliance Report to DEWNR to ensure outcomes are met to their satisfaction.

Receptor *Note: Lists are not exhaustive.*	Potential Impacts *Note: Lists are not exhaustive*	Is the Potential Impact Applicable (Yes or No) *Note: some potential are applicable to all programs*	Control and rehabilitation strategies *Note: Where the risk is not considered low after implementing control and rehabilitation strategies, provide justification that the risk is acceptable, or consider additional strategies to reduce the risk to an acceptable level (refer to MG22 Guidelines for more information)).*	Impact Assessment			Outcomes	Outcome Measurement Criteria (includes Monitoring Plan)
				LH	CQ	Risk		
Surface hydrology	Alteration to surface hydrology - interference to surface drainage.	No *Applicable to exploration programs that are likely to impact on surface drainage channels.*	- Vehicle movements will be restricted to existing tracks. These tracks to do not cross any known surface drainage channels. - All drillsites will be situated away from any surface drainage.				No permanent modification to hydrological features caused by exploration activities without obtaining a water affecting permit from the relevant Natural Resource Management Board.	Provide before, during and after photographic evidence within the Exploration Compliance Report demonstrating that original drainage contours (water courses, and lakes) are consistent with the natural relief post rehabilitation within 3 months of completion of the program Alternatively, provide copies of water affecting permits within the Exploration Compliance Report.
Groundwater/aquifer	Groundwater contamination: • Contamination of aquifers through entry of pollutants from the surface. • Interconnection between aquifers. • Degradation of natural hydrostatic conditions (maintain pre-drilling pressures).	Yes *Applicable to all exploration programs that may intersect groundwater*	- Establish expected groundwater conditions in the area prior to drilling. - Alert drillers to observe changing groundwater conditions during drilling. - Record pertinent details of any aquifers intersected. - Ensure only approved drilling products are used downhole (e.g. degradable, non-toxic products). - Ensure the top section of cavernous limestone is cased before entering lower sedimentary units to avoid contamination of known limestone aquifers. - Ensure drillholes are not used for disposal of any unwanted hydrocarbons or chemicals. - Abandon drillholes in accordance with relevant M21 Regulatory Guidelines where aquifers have been intersected. For holes intersecting unconfined aquifers, the hole will be backfilled with drill cuttings; the hole will be suitably plugged with topsoil mounded over the hole. - Ensure necessary casing and grout is either on site or readily available, in the unlikely event that confined multiple aquifers are intersected. - Ensure all drilling have had adequate training in conducting drilling within multiple aquifer environments	*1*	*B*	*L*	Drill holes 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 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 drill holes are decommissioned in accordance with the Department of State Development's M21 guidelines and/or specific conditions from DEWNR (Groundwater) within 3 months of completion of the program. Provide the information requested within the '*Groundwater'* section of the Exploration Compliance Report.
Soil/vegetation	Discharge of groundwater into the surrounding environment.	Yes *Applicable to all exploration programs that may intersect groundwater or where activities require the discharge of groundwater into the surrounding environment.*	- All water used during the diamond coring process will be captured at the drill collar using the SRU. All fluid used during mud rotary operations will be used with a SRU and/or above ground sump (tank). - Additional above-ground poly tanks will be on site to hold water in excess of the SRU's capacity. - Any excess water will be disposed of via an approved off-site facility or designated pit/sump approved by DEWNR. - If required, drilling operations will cease to ensure that no groundwater runs beyond the drill pad. - Ensure necessary casing and grout is either on site or readily available, in the unlikely event that confined or multiple aquifers are intersected.	*2*	B	*L*	No discharge of groundwater outside of the exploration site (e.g. drill site) 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 drill sites demonstrating that groundwater was not discharged into the surrounding environment, unless water affecting activity permits were obtained allowing the discharge of groundwater into watercourses and/or lakes. Representative photos and water affecting activity permits (where applicable) to be included within the Exploration Compliance Report.
Groundwater users	Interference to existing water users when extracting water from existing	Yes *Applicable to all exploration programs that may require the use of*	- Water will only be sourced from water access points (bores), after approval from DEWNR. - Water will only be extracted in quantities negotiated with DEWNR. All extracted quantities can be reported to DEWNR and/or FWCAC for monitoring.	*3*	*B*	*M*	No public nuisance impacts resulting from the extraction of water for exploration purposes unless prior approval	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

Receptor *Note: Lists are not exhaustive.*	Potential Impacts *Note: Lists are not exhaustive*	Is the Potential Impact Applicable (Yes or No) *Note: some potential are applicable to all programs*	Control and rehabilitation strategies *Note: Where the risk is not considered low after implementing control and rehabilitation strategies, provide justification that the risk is acceptable, or consider additional strategies to reduce the risk to an acceptable level (refer to MG22 Guidelines for more information)).*	Impact Assessment			Outcomes	Outcome Measurement Criteria (includes Monitoring Plan)
				LH	CQ	Risk		
	dams, water bores or mineral drill holes.	*water from existing dams, water bores or mineral drill holes.*	- By utilising an SRU, casing the cover sequence and drilling with certain techniques, water use will be minimised as much as possible. - Water may be sourced from an exploration hole drilled during this program. If that occurred, the hole will be abandoned as per M21 guidelines. - Water may be obtained through current water supplies at Border Village, or Eucla, pending approval. - Water may be sourced from a nearby township that is trucked in via the Eyre Highway. - Despite the consequence is minor, the likelihood is possible creating a Moderate risk. Due to the remoteness of the program and lack of infrastructure, it may be difficult to extract water at the rate required. All water users will be fully consulted and open dialogue will be utilised to minimise any interference.				under the relevant legislation is obtained.	satisfaction of both parties, prior to and ongoing during the course of the exploration program. Where permits are required for the extraction and/or usage of groundwater, provide copies of the license or permit within the Exploration Compliance Report.
Community /Landholders	Noise, dust and other emissions (i.e. light and odour) emanating from exploration activities.	Yes *(applicable to all programs)*	- All proposed drill sites occur in a remote environment, within a Wilderness Protected Area, away from any infrastructure. - Consultation with DEWNR and the FWCAC has been ongoing and will continue, with appropriate channels in place to resolve any concerns that may arise. - All drill sites are situated at least 10km from the nearest occupied residences. - Night time vehicle movements will be minimal. - Vehicles will have various speed limits imposed in different areas, to limit dust generation from dirt roads.	*2*	*A*	*L*	No public nuisance impacts from noise, dust and other emissions emanating from exploration activities.	Provide the information requested within the '*Complaints'* section of the Exploration Compliance Report demonstrating that appropriate action was taken to resolve reasonable landowner/community complaints, prior to and ongoing during the exploration program.
The environment	Degradation of rehabilitated access tracks caused by third party access (includes previously closed and rehabilitated access tracks).	No *Applicable to exploration programs that create new access tracks*	- Once rehabilitation is complete, access to pads may be blocked and disguised either through obstacles such as fallen tree branches or wooden stakes. This will be assessed on a case by case basis and dependent on the surrounding vegetation. - Pad access will be doglegged off existing tracks.				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 completion of the program. Representative photos are to be included within the Exploration Compliance Report. Provide the information requested within the '*Rehabilitation'* section of the Exploration Compliance Report.
The environment	Damage to infrastructure and loss of income through fire.	Yes (applicable to all programs)	- Fires are not permitted on fire ban days. - Information about fire safety on site will be included in the induction. - Hot works permits (internal management tool) will be required for activities such as welding, grinding, oxy cutting – i.e. firefighting provisions need to be in place. - All vehicles and machinery will be fitted with at least one fire extinguisher. - Fire suppression units will be fitted to large plant such as the rig. - Fires for warmth/cooking will only be authorised in designated places, with firefighting tools at hand. - All bulk storage facilities will have a fire extinguisher.	*1*	*B*	*L*	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 Exploration Compliance Report confirming that no [3]uncontrolled fires occurred. Alternatively, provide a report on the independent investigation of all [3]uncontrolled fires demonstrating that the operator could not have reasonably prevented the fire through the implementation of precautionary measures.

[3] Uncontrolled = fires that escape outside of the work area (e.g. drill site).

Receptor *Note: Lists are not exhaustive.*	Potential Impacts *Note: Lists are not exhaustive*	Is the Potential Impact Applicable (Yes or No) *Note: some potential are applicable to all programs*	Control and rehabilitation strategies *Note: Where the risk is not considered low after implementing control and rehabilitation strategies, provide justification that the risk is acceptable, or consider additional strategies to reduce the risk to an acceptable level (refer to MG22 Guidelines for more information)).*	Impact Assessment			Outcomes	Outcome Measurement Criteria (includes Monitoring Plan)
				LH	CQ	Risk		
			- Fire extinguishers will be positioned in the camp. The camp will be situated in a cleared area with at least a 5m gap between any infrastructure and vegetation. - All fire extinguishers will be inspected at least every 6 months to ensure they are in date. - No drilling activities will occur on Catastrophic rated fire days, nor will any CDP personnel be allowed to enter a drill pad.					
Public safety	Injury or death to members of the public as a result of exploration activities.	Yes (applicable to all programs)	- Only inducted personnel who have a direct need to be in the work area of the rig will be permitted in close proximity to operations. - At drill sites near more major access tracks or roads, a physical barrier (e.g. safety fencing, bunting or line of cones) will be established. - An exclusion zone will be delineated at all drill sites with tape and pegs. - Drill crew members will be notified to keep an eye out for any approaching members of the public. - Any visitors to the drilling operations will undergo a visitors induction and will be required to be accompanied by a fully inducted staff member. - Warning signs, highlighting the hazards of drilling operations will be erected around the drill site. - Note that whilst the likelihood of such an incident occurring is rated as rare, the consequence has been rated as major, producing a risk ranking of 'High'. This is deemed acceptable, given the highly unlikely likelihood, and the safety measures and level of supervision that will be present at the rig.	*1*	*D*	*H*	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 Exploration Compliance Report confirming no accidents occurred involving the public during and after the exploration program. If an accident involving the public did occur, provide a copy of the independent investigation report within the Exploration Compliance Report demonstrating that the operator could not have reasonably prevented the accident through the implementation of precautionary measures.
Public safety, employees, contractors and the environment	Contamination of the environment when exploring for known uranium and thorium deposits Public and employee/contractor exposure to low level radiation.	No *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 Exploration Compliance Report demonstrating that; • Radiation levels post exploration and rehabilitation is consistent with pre-existing background levels. • Employee and contractors exposure levels were within safe limits during the exploration program.
Other (if applicable)								

SECTION G - PHOTOS

Include photographs in this section;

- that have been obtained during site visits, and
- 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 1 page width. Ensure that all information about each photo is completed and refer to the photo No. in the relevant section of the PEPR.

Site ID/details	**Date taken**	**Photo No. & PEPR Section ref.**	**Easting** (GDA94)	**Northing** (GDA94)	**Zone**	**Comments**
CP01	26/10/16	Photo 1, Vegetation and Landform	519875	6502861	52	Previously cleared area for road maintenance showing sparsely shrubby vegetation. View looking west back towards track.

Site ID/details	Date taken	Photo No. & PEPR Section ref.	Easting (GDA94)	Northing (GDA94)	Zone	Comments
CP02	26/10/16	Photo 2, Vegetation and Landform	526592	6517560	52	Grass dominated area with bluebush. Outcropping limestone near surface with calcareous loam topsoil. View looking south back towards track.

Site ID/details	Date taken	Photo No. & PEPR Section ref.	Easting (GDA94)	Northing (GDA94)	Zone	Comments
CP03	27/10/16	Photo 3, Vegetation and Landform	595857	6518070	52	Grass dominated area off microwave tower road. Shallow calcareous loam soil. View looking south.

Site ID/details	Date taken	Photo No. & PEPR Section ref.	Easting (GDA94)	Northing (GDA94)	Zone	Comments
CP11	26/10/16	Photo 4, Vegetation and Landform	508923	6512491	52	Sparse grass dominated area with minor saltbush. Shallow calcareous loam soil. View looking east towards track.

Site ID/details	Date taken	Photo No. & PEPR Section ref.	Easting (GDA94)	Northing (GDA94)	Zone	Comments
CP12	26/10/16	Photo 5, Vegetation and Landform	532749	6517213	52	Grass dominated area with minor saltbush. Subcropping limestone near surface. View looking north.

Site ID/details	Date taken	Photo No. & PEPR Section ref.	Easting (GDA94)	Northing (GDA94)	Zone	Comments
CP13	27/10/16	Photo 6, Vegetation and Landform	555073	6519012	52	Cleared area near Albala-Karoo tank looking south.

Site ID/details	Date taken	Photo No. & PEPR Section ref.	Easting (GDA94)	Northing (GDA94)	Zone	Comments
Existing Track to CP01	26/10/16	Photo 7, Track Access	519875	6502861	52	Existing track in the vicinity of CP01. Track sheeted and maintained for microwave tower access. View looking south.

Site ID/details	Date taken	Photo No. & PEPR Section ref.	Easting (GDA94)	Northing (GDA94)	Zone	Comments
Existing Track to CP02 & CP12	26/10/16	Photo 8, Track Access	526592	6517560	52	Existing track in the vicinity of CP02, the "Old Coach" road that extends into WA. View looking west.

Site ID/details	Date taken	Photo No. & PEPR Section ref.	Easting (GDA94)	Northing (GDA94)	Zone	Comments
Existing Track to CP11	26/10/16	Photo 9, Track Access	508923	6512491	52	Existing track in the vicinity of CP11, which connects the “Old Eyre Highway” with the current one. View looking north.

Site ID/details	Date taken	Photo No. & PEPR Section ref.	Easting (GDA94)	Northing (GDA94)	Zone	Comments
DPTI Quarry for CP09	25/10/16	Photo 10, Sampling	524323	6499694	52	Existing road base pit, excised from the NWPA and a possible site for drill cutting disposal.

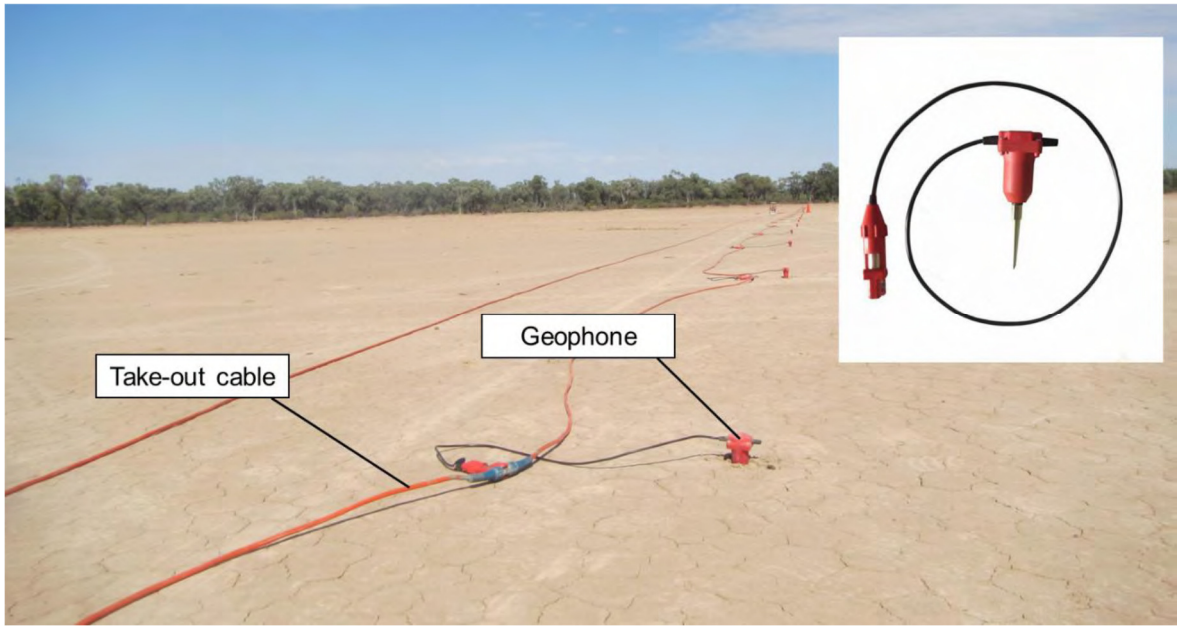
Site ID/details	Date taken	Photo No. & PEPR Section ref.	Easting (GDA94)	Northing (GDA94)	Zone	Comments
Old Eyre Highway Borrow Pit	27/10/16	Photo 11, Sampling	584711	6518795	52	Existing road base pit along old Eyre Highway and a possible site for drill cutting disposal.

Site ID/details	Date taken	Photo No. & PEPR Section ref.	Easting (GDA94)	Northing (GDA94)	Zone	Comments
						Photos of low impact geophysical techniques from Section D

Photo of passive seismic deployment. An auger hole, maximum 50 cm deep contains the seismometer. Battery and recorder are left above ground.

Example of the tow-ball mounted hydraulic ram used to hit a metal plate and generate a small seismic source for active seismic reflection profiling.

Site ID/details	Date taken	Photo No. & PEPR Section ref.	Easting (GDA94)	Northing (GDA94)	Zone	Comments
						Photos of low impact geophysical techniques from Section D



Example of geophone array laid out to collect the active seismic reflection profile. The small geophones are pushed into the ground and are all connected to a data-logger by the red take-out cables.

Exmple of a Magnetotelluric deployment. Six shallow holes are dug to bury 4 electrodes and 2 magnetic coils (red tube below). A grey recorder box sits above ground.

Site ID/details	Date taken	Photo No. & PEPR Section ref.	Easting (GDA94)	Northing (GDA94)	Zone	Comments
						Photos of low impact geophysical techniques from Section D

Photo of operator using a gravity meter. There are buttons on the top and a remote control to operate it from a distance.

SECTION H – MAPS

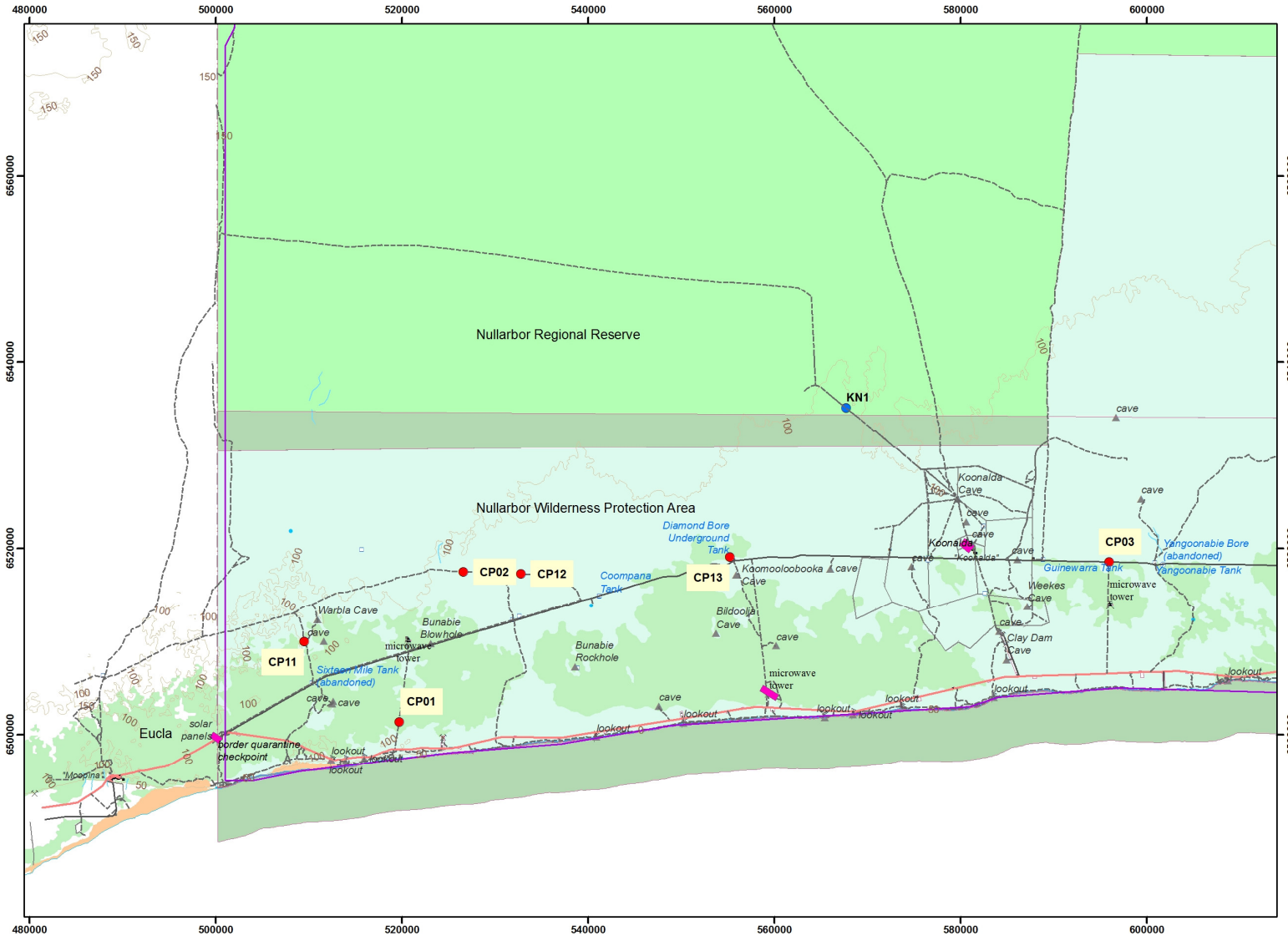
Provide a map(s) showing the following information that is located adjacent to or within the proposed area of operations (where applicable);

- tenement boundaries,
- cadastral information,
- existing surface contours,
- existing vegetation,
- location of the proposed exploration operations (includes drill holes, existing and new access tracks, drill traverses, camp sites, 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 houses and homesteads, existing roads, rails, fences, transmission lines, buildings, dams and pipelines,
- known sightings of listed species on a locality plan/map,
- location and extent of all environmentally sensitive areas, and
- any relevant land use types (e.g. Parks and Reserves, Aboriginal Freehold land, Woomera Prohibited Area etc.).

Attach maps here

Please refer to email attachments for Plans 1&2, as follows:

- Plan 1 – CDP Drillhole Location Plan
- Plan 2 – Environmental Sensitivity Map



CDP Stage 1 Drillhole Location Plan

Legend

CDP_Drilling Sites

Land_Tenure, Priority_Ranking

- WPA, 1A
- WPA, 2
- Exploration Tracks
- Coompana 3 Section 15
- Proposed Camp Site
- Highway
- Secondary Road (unsealed)
- Track
- Parking Bay
- Cadastral Parcels
- Geology Monuments
- Coastline (Mean High Water Mark)
- Land Features
- Building
- Minor Landmark Object
- Mast, Tower
- Waterhole, Rockhole
- Tank
- Bore, Well
- Watercourse
- State Border
- Coastline
- Mine
- Tower
- Mast
- Operational
- Ruin
- Standard Contour
- Depression Contour
- Interpolated Contour
- Connector Discontinuity
- Fences
- Mine Area
- Sand Area
- Forest Or Shrub
- National Park
- Regional Reserve
- Wilderness Areas

Map generated on 23 November 2016

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GPO Box 1264, ADELAIDE South Australia 5001
Phone (08) 8463 3000

Drawn: L.Tylkowski

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Coordinate System: GDA1994 MGA Zone 53
Projection: Transverse Mercator GDA 1994

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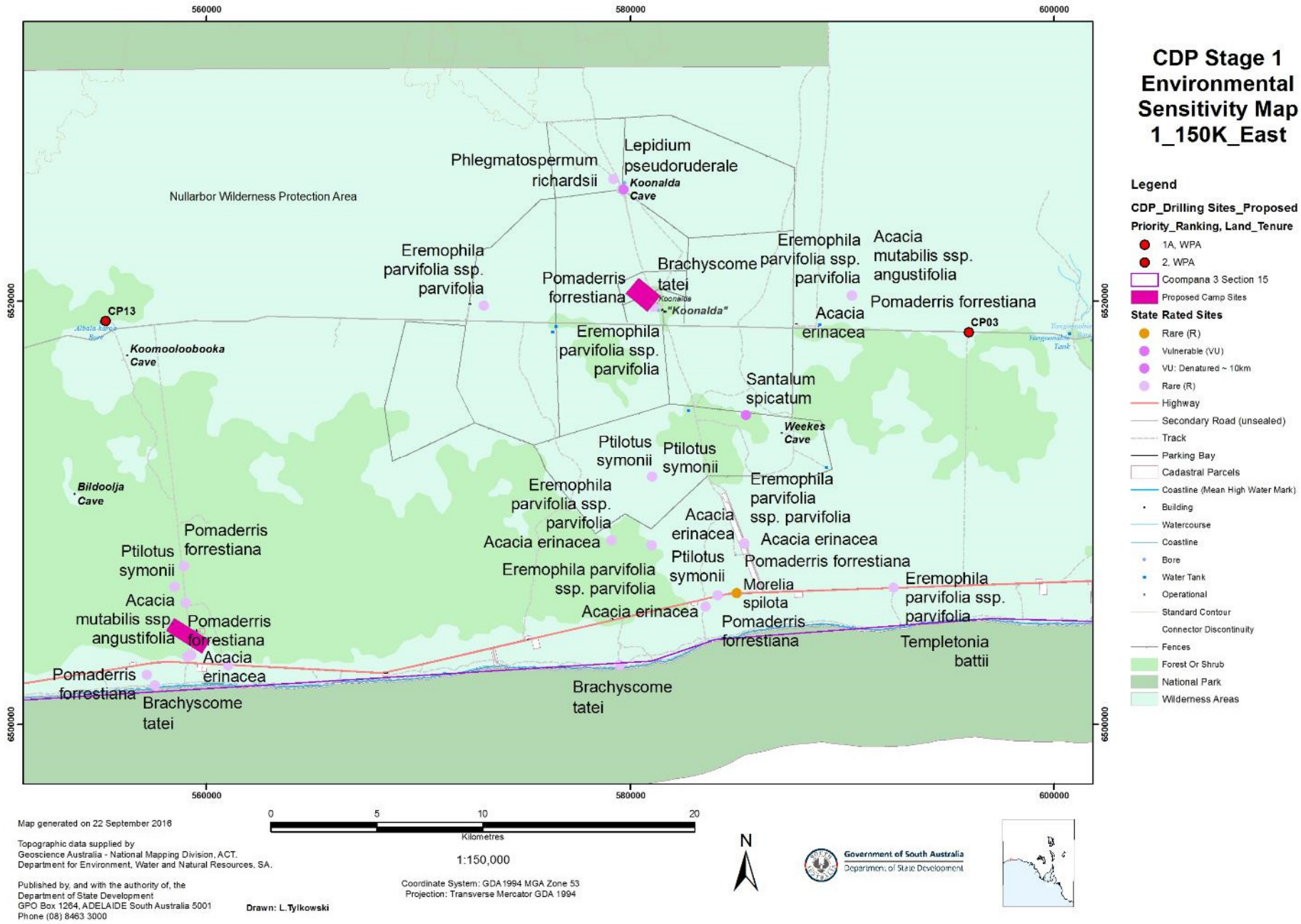
CDP Stage 1 Environmental Sensitivity Map 1_150K_East
Legend
CDP_Drilling Sites_Proposed
Priority_Ranking, Land_Tenure
1A, WPA
2, WPA
Coompana 3 Section 15
Proposed Camp Sites
State Rated Sites
Rare (R)
Vulnerable (VU)
VU: Denatured ~ 10km
Rare (R)
Highway
Secondary Road (unsealed)
Track
Parking Bay
Cadastral Parcels
Coastline (Mean High Water Mark)
Building
Watercourse
Coastline
Bore
Water Tank
Operational
Standard Contour
Connector Discontinuity
Fences
Forest Or Shrub
National Park
Wilderness Areas
Nullarbor Wilderness Protection Area
CP13
CP03
Koomooloobooka Cave
Bildoolja Cave
Weekes Cave
Koonalda Cave
"Koonalda"
Phlegmatospermum richardsii
Lepidium pseudoruderale
Eremophila parvifolia ssp. parvifolia
Pomaderris forrestiana
Brachyscome tatei
Acacia mutabilis ssp. angustifolia
Acacia erinacea
Santalum spicatum
Ptilotus symonii
Morelia spilota
Templetonia battii
560000
580000
600000
6520000
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10
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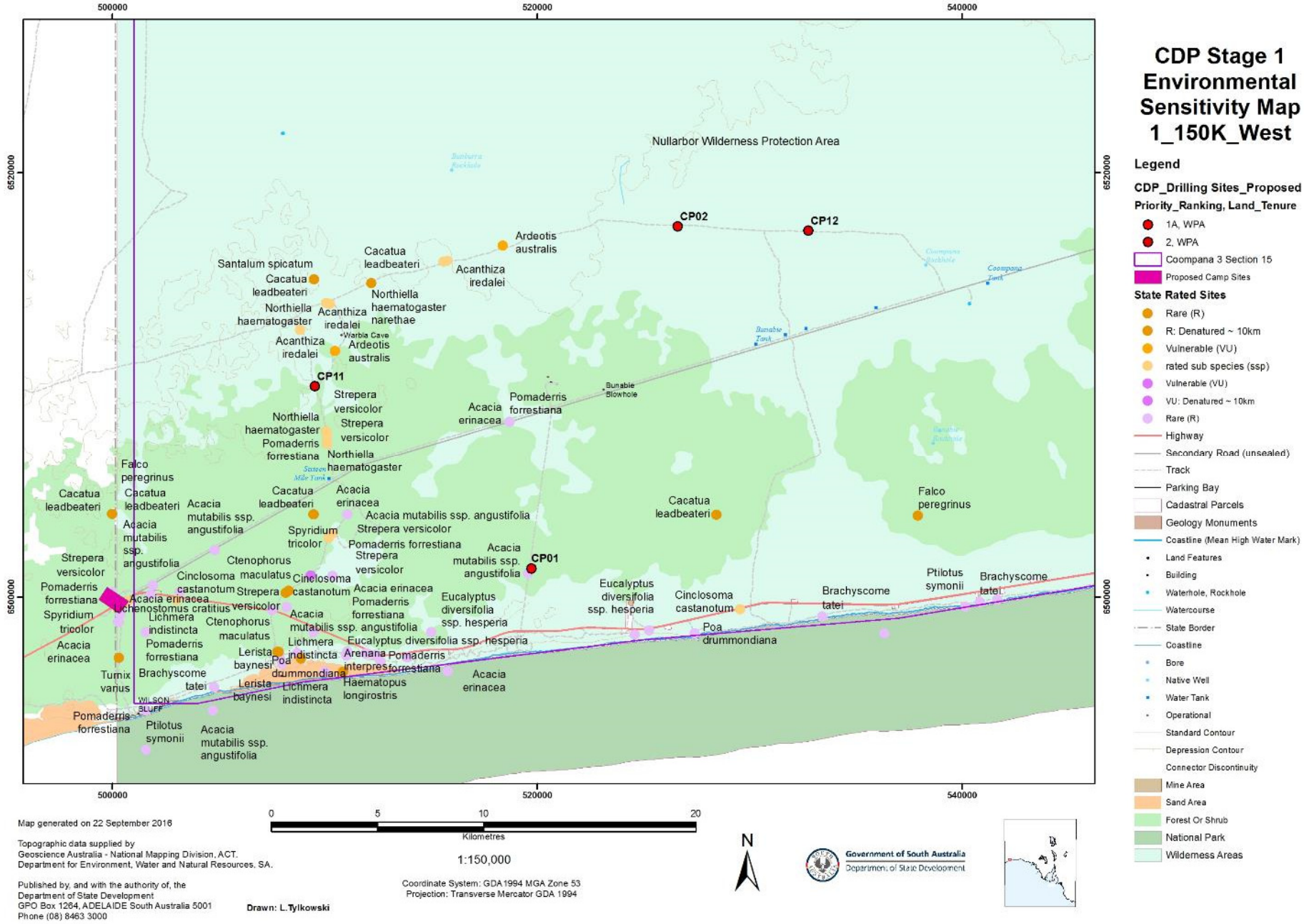
CDP Stage 1 Environmental Sensitivity Map 1_150K_West
Legend
CDP_Drilling Sites_Proposed
Priority_Ranking, Land_Tenure
1A, WPA
2. WPA
Coompana 3 Section 15
Proposed Camp Sites
State Rated Sites
Rare (R)
R: Denatured ~ 10km
Vulnerable (VU)
rated sub species (ssp)
Vulnerable (VU)
VU: Denatured ~ 10km
Rare (R)
Highway
Secondary Road (unsealed)
Track
Parking Bay
Cadastral Parcels
Geology Monuments
Coastline (Mean High Water Mark)
Land Features
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Standard Contour
Depression Contour
Connector Discontinuity
Mine Area
Sand Area
Forest Or Shrub
National Park
Wilderness Areas
Nullarbor Wilderness Protection Area
CP01
CP02
CP11
CP12
500000
520000
540000
6520000
6500000
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SECTION I – ADDITIONAL INFORMATION

Additional information

List any other supporting information and/or documents submitted with the application.

N/A