

Rio Tinto Exploration - Proposed Exploration Drilling

Assessment Application Report – The Desert
(EPM 28700)

(29 November 2024)

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Abbreviations

AOI	Area of interest
EA	Environmental Authority
EVNT	Endangered, Vulnerable and Near Threatened species
IBRA	Interim Biogeographic Regionalisation for Australia
MSES	Matters of State Environmental Significance
MNES	Matters of National Environmental Significance
RE	Regional Ecosystem
RIDA	Regional Interests Development Approval
RTX	Rio Tinto Exploration
SEA	Strategic Environmental Area

1. Introduction

Rio Tinto Exploration Pty Limited (RTX) proposes to undertake exploration activities, including drilling for Heavy Mineral Sands, Copper and Base Metals on EPM28700 The Desert Project. RTX holds existing Environmental Authority EA-100388139 which encompasses EPM28700 (**the tenement**). In addition, RTX is seeking a Regional Interests Development Approval (**RIDA**) for mineral exploration to be undertaken within the Gulf River Strategic Environmental Area (**SEA**), (Figure 1).

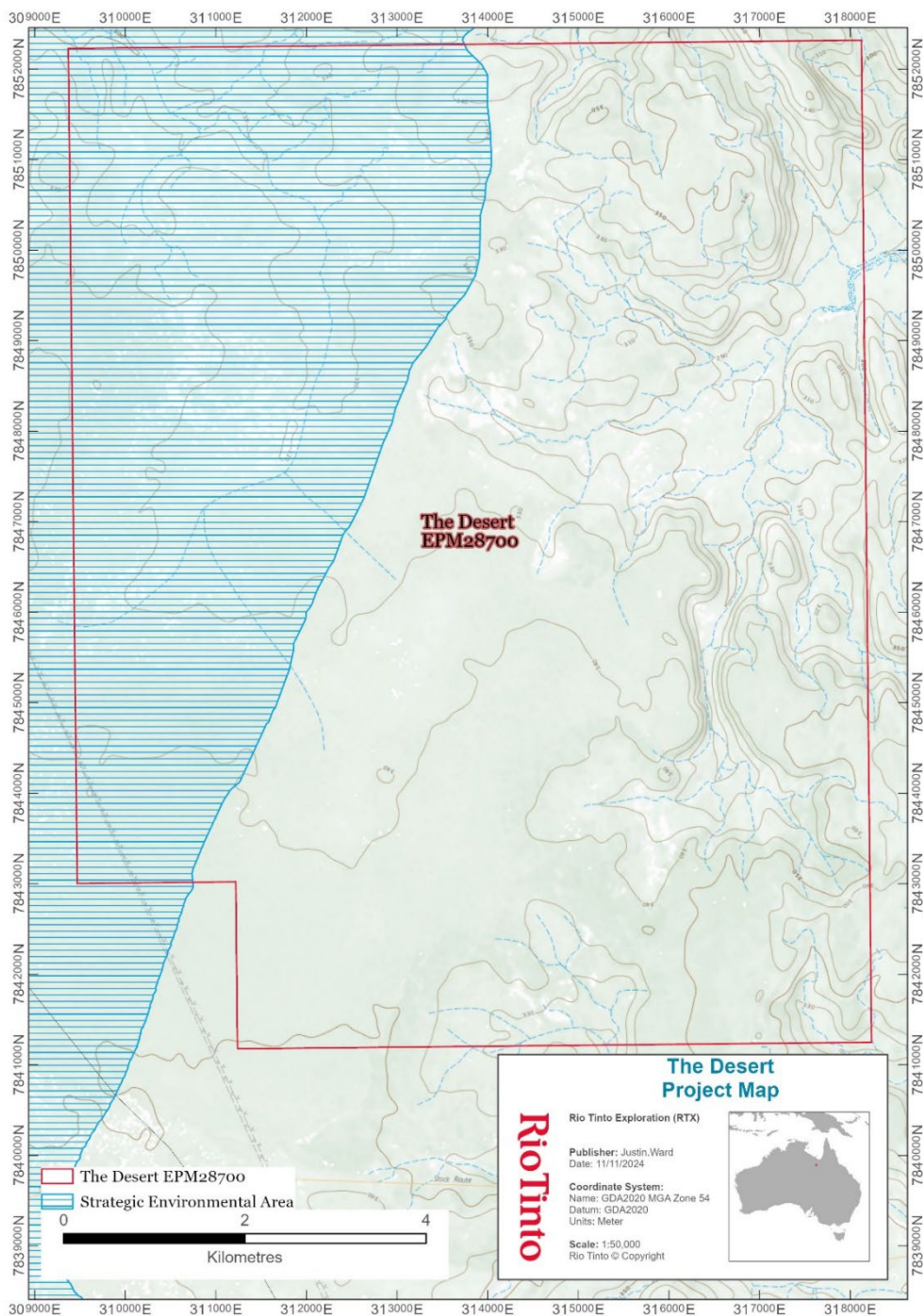


Figure 1 : EPM28700 relative to the Gulf River Strategic Environmental Area

This assessment report accompanies RTX’s application for a Regional Interests Development Approval and has been prepared in accordance with the *Regional Interest Planning Act 2014 (RPI Act)* (DSDMPIP, 2019). RTX has assessed the environmental attributes of the tenement areas and proposed mitigating controls to ensure protection of these attributes from irreversible impacts. It is considered that the proposed activity will not result in the widespread or irreversible impact on any environmental attribute of the Gulf Rivers Strategic Environmental Area.

Environmental attributes associated with the Gulf River Strategic Environmental Area are outlined in the *Regional Planning Interest Regulations 2014* under Regulation 9 and an assessment has been conducted against them (Queensland Government 2014).

1.1 Project Overview

The Desert Project straddles the boundary of Thornton Station to the West and Toorah Vale Station to the East. The proposed exploration activities are temporary, small scale and comparatively low environmental impact.

1.2 The Applicant

The applicant is Rio Tinto Exploration Pty Limited which is a subsidiary company of Rio Tinto Limited.

1.3 Landholder and Tenure Details

Exploration Permit EPM28700 The Desert was granted on 29th July 2024 to Rio Tinto Exploration (Table 1).

Table 1. Resource Authority Information

Tenement	Application	Grant	Term	Expiry	Sub-blocks
EPM28700	24/01/2023	29/07/2024	5 years	28/07/2029	29

The Native Title holder is the Kalkadoon People and the Indjalandji Dhindanu People as shown in Figure 2 below. The dominant land use is pastoralism.

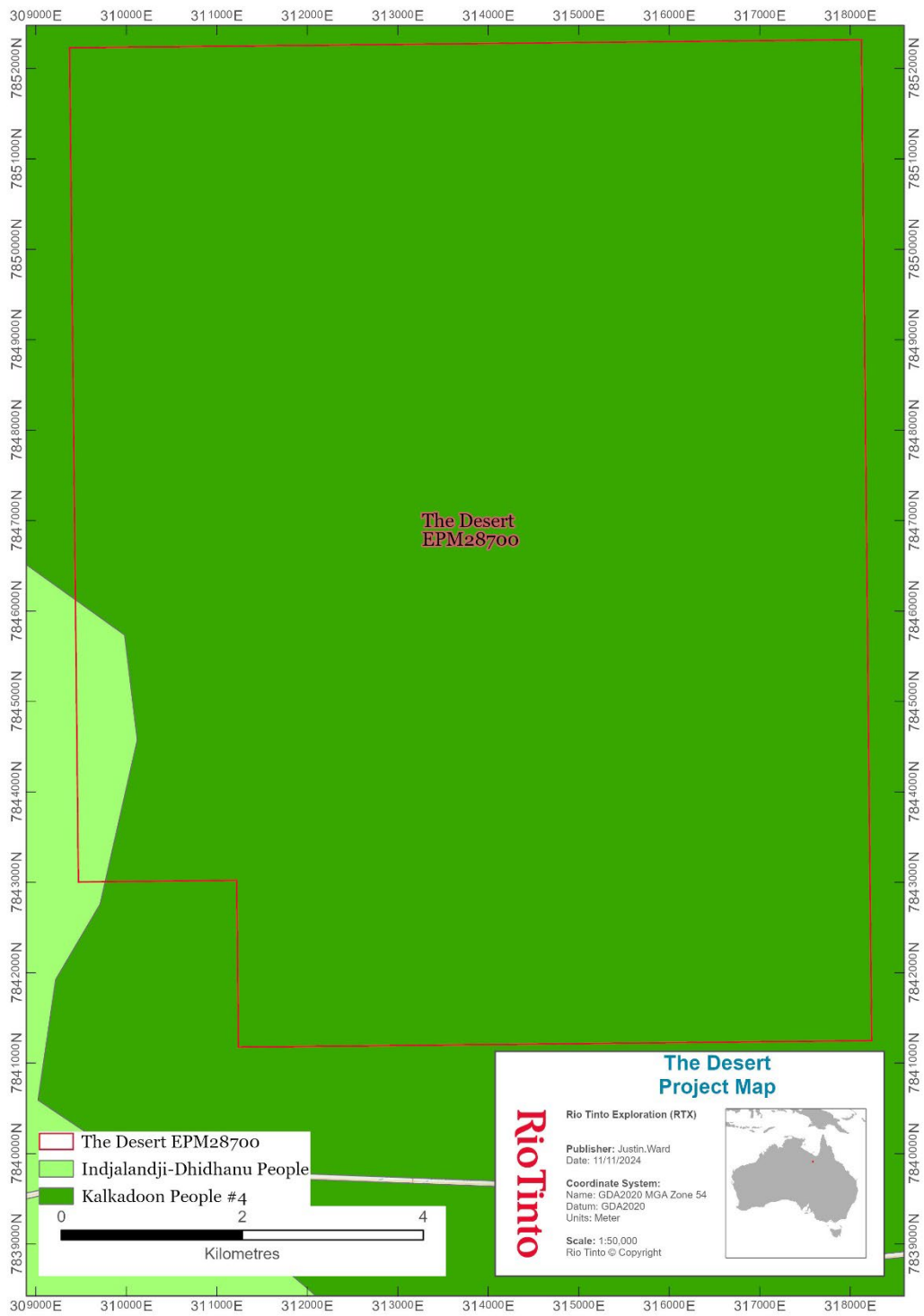


Figure 2. Native Title Area surrounding EPM28700

2. Proposed Exploration Activities

2.1 Drilling Program

Exploration drilling will be undertaken using the aircore drilling technique.

A maximum of 30 drill pads are planned in the Gulf Rivers SEA (Figure 3). Planned drill depths are up to 40m but could potentially reach 90m depending upon depth to basement found during drilling. Table 1 summarises expected surface disturbance, based on 12m-by-6.75m drill sites.

Drill site locations may be adjusted slightly following a field reconnaissance in order to minimise vegetation disturbance and following cultural heritage surveys in order to avoid cultural heritage impacts. Access routes to each of the drill sites will be determined following a field reconnaissance and subsequent cultural heritage survey; to minimise the amount of ground disturbance, where possible, routes will use existing or historic tracks.

Following the completion of each hole, there is potential that openhole geophysics will be conducted prior to the holes being rehabilitated.

Activity	length (km)	Width (m)	Area of impact (ha)
Existing Tracks	1.7	4.5	0.8
Proposed Tracks	14	4.5	6.3
Activity	Spacing (m)	Number	Area of impact per site (ha)
Drill Site	1,000 x 450	30	0.008
Downhole Geophysics	N/A	N/A	0

Table 2: Summary of proposed exploration activities and surface disturbance

Drilling will be completed using a truck mounted aircore rig. Other equipment includes drill rig support vehicles and light vehicles for geologists, fieldhands and other project support personnel e.g., environment surveyors, traditional owners.

Drill sites will be rehabilitated once no further work is required on the site. Where reasonably achievable, rehabilitation will occur prior to the onset of the next wet season, subject to seasonal constraints and equipment availability.

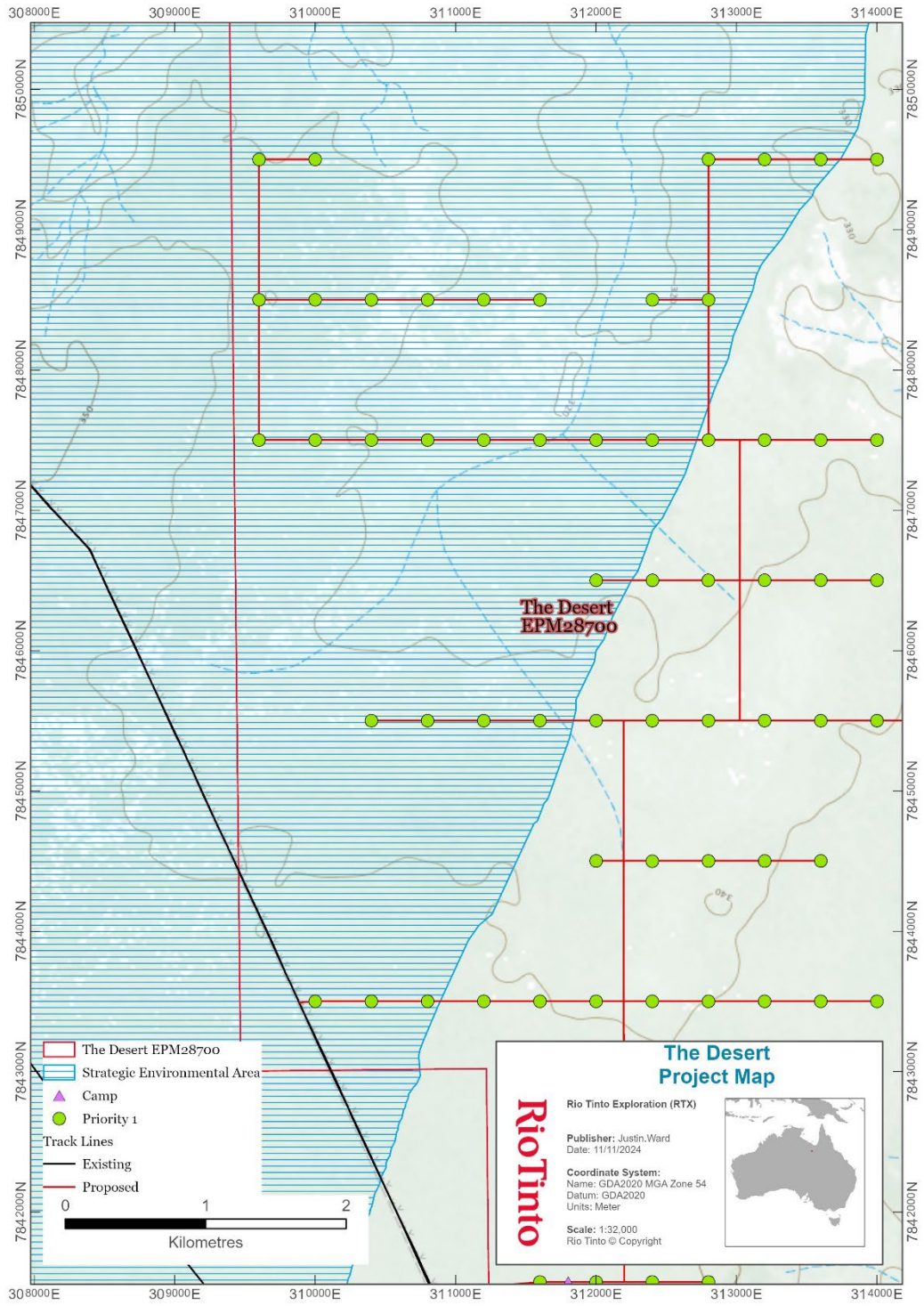


Figure 3. The Desert Work Program

2.2 Access Roads and Tracks

Existing tracks will be used wherever possible and re-established as required. New exploration tracks will need to be constructed for exploration drilling. New exploration tracks are proposed to be cleared with a front-end loader or similar equipment, up to approximately 4.5m wide excluding windrows. The machine will clear ground with a minimum disturbance approach, which is with the blade-up to preserve root stocks and going around larger trees wherever possible. Where this is not possible, blades down clearance will be used to clear vegetation and any outcropping rock. A maximum of 15 new tracks, equalling approximately 14 linear km are proposed to be cleared (Table 1). Tracks constructed for the purpose of exploration will be rehabilitated once no further access is required along the track with the landform returned to its original form and topsoil returned where present. Where reasonably achievable, rehabilitation will occur prior to the onset of the next wet season, subject to seasonal constraints and equipment availability.

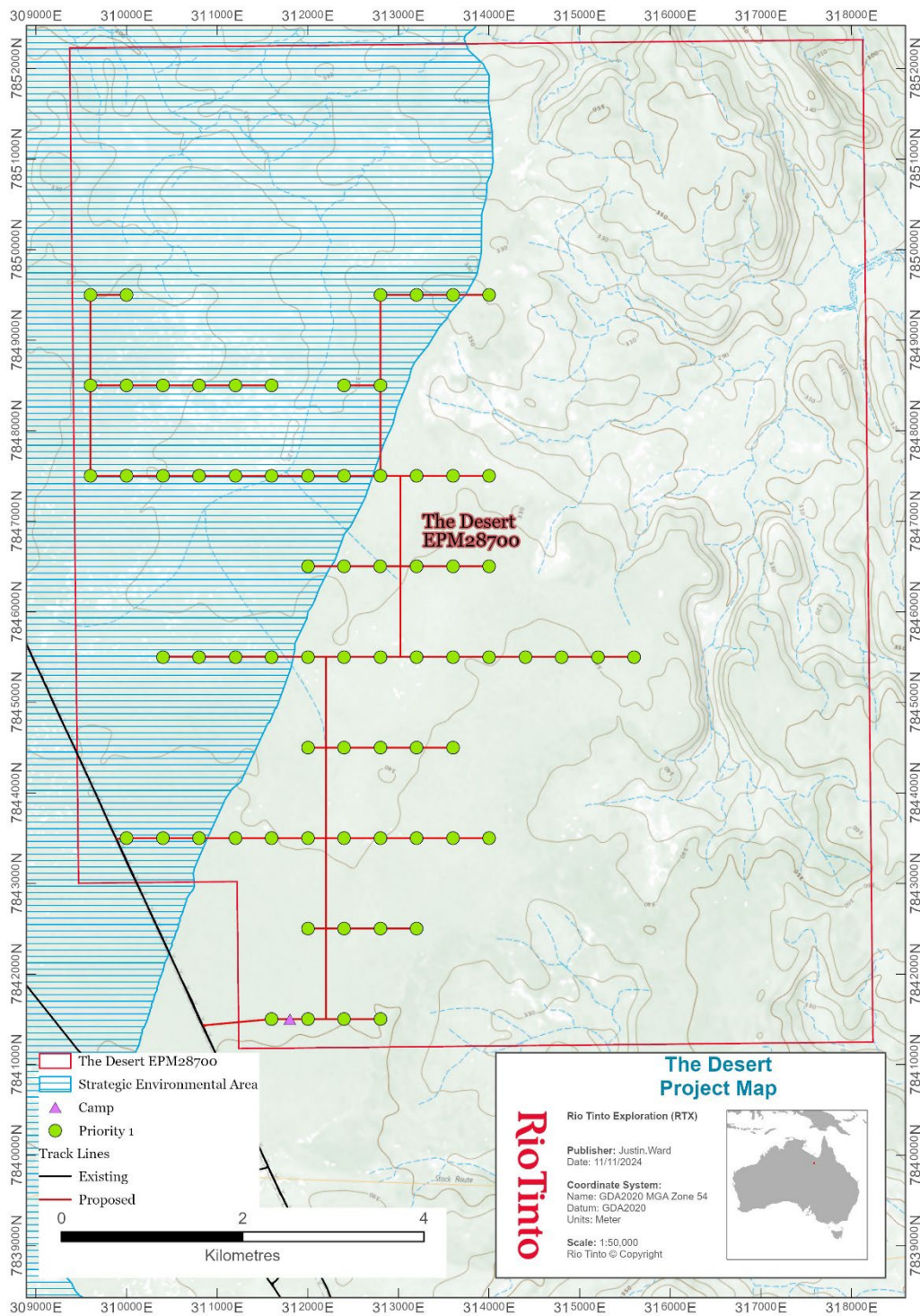


Figure 4. The Desert Project proposed Access Roads, Tracks, and Camp Location.

2.3 Water Supply

No water will be extracted from surface waterways within the tenement. Water for drilling will be sourced from established bores following Justin approval from the owner. If this is not possible, water for drilling will be brought into the Project Area for use. Drinking water will be purchased in nearby townships and taken to the Project Area.

2.4 Timing

Exploration will be undertaken during the dry season only from April to November. The planned duration of this first drilling programme is approximately one month.

3. Environmental Attributes

The environmental attributes associated with the Gulf River Strategic Environmental Area are outlined in the Regional Planning Interest Regulations 2014 under Regulation 9 and described as follows: (Queensland Government 2014).

- (a) the natural hydraulic processes of the area characterised by-
 - (i) natural, unrestricted flows in and along watercourses and estuaries; and
 - (ii) overflow from watercourses onto flood plains of the area, or the other way: and
 - (iii) natural flow paths of water across flood plains connecting waterholes, lakes and wetlands in the area; and
 - (iv) natural flow in and from groundwater and springs;
- (b) the natural geomorphic processes of the area characterised by-
 - (i) natural erosion; and
 - (ii) the transport and deposit of sediment by water throughout the catchments and along watercourse systems and estuaries;
- (c) the functioning riparian processes of the area characterised by native riparian vegetation associated with watercourses, estuaries, lakes, floodplains and wetlands.
- (d) the functioning wildlife corridors of the area characterised by-
 - (i) natural habitat in the watercourse systems; and
 - (ii) permanent waterholes and springs;
- (d) the natural water quality in the watercourse channels and aquifers and on flood plains in the area characterised by physical, chemical and biological attributes that support and maintain natural aquatic and terrestrial ecosystems.

3.1 Climate

The exploration area is located approximately 225 km to the northwest of the City of Mt Isa and has a hot, dry climate with a distinct wet and dry season. The nearest weather station is Camooweal (station number 037010) which has a mean maximum annual temperature of 33.0°C and a mean minimum annual temperature of 17.7°C. The mean annual rainfall is 401.3 mm with most occurring from November through to March (Table 2). Very little rainfall is typically reported from June to September (BOM, 2022).

Month	Mean maximum temperature (°C)	Mean minimum temperature (°C)	Mean Rainfall (mm)
January	37.4	24.4	99.5
February	36.3	23.7	92.3
March	35.3	21.8	55.7
April	33.1	18.1	13.8
May	29.0	13.5	10.5
June	26.0	9.9	9.8
July	25.9	8.8	5.3
August	28.5	10.9	2.9
September	32.4	15.2	6.7
October	35.9	19.6	14.1
November	37.6	22.4	30.0
December	38.1	23.9	63.2
Annual	33.0	17.7	401.3

Table 3: Climate Data for EPM28700 adapted from the Bureau of Meteorology 2022

3.2 Hydrology

EPM28700 is located in the Gregory Wild River Area and forms part of the Leichhardt and Nicolson catchment.

No part of EPM28700 intersects with Wetlands of Ecological significance as shown in Figure 6.

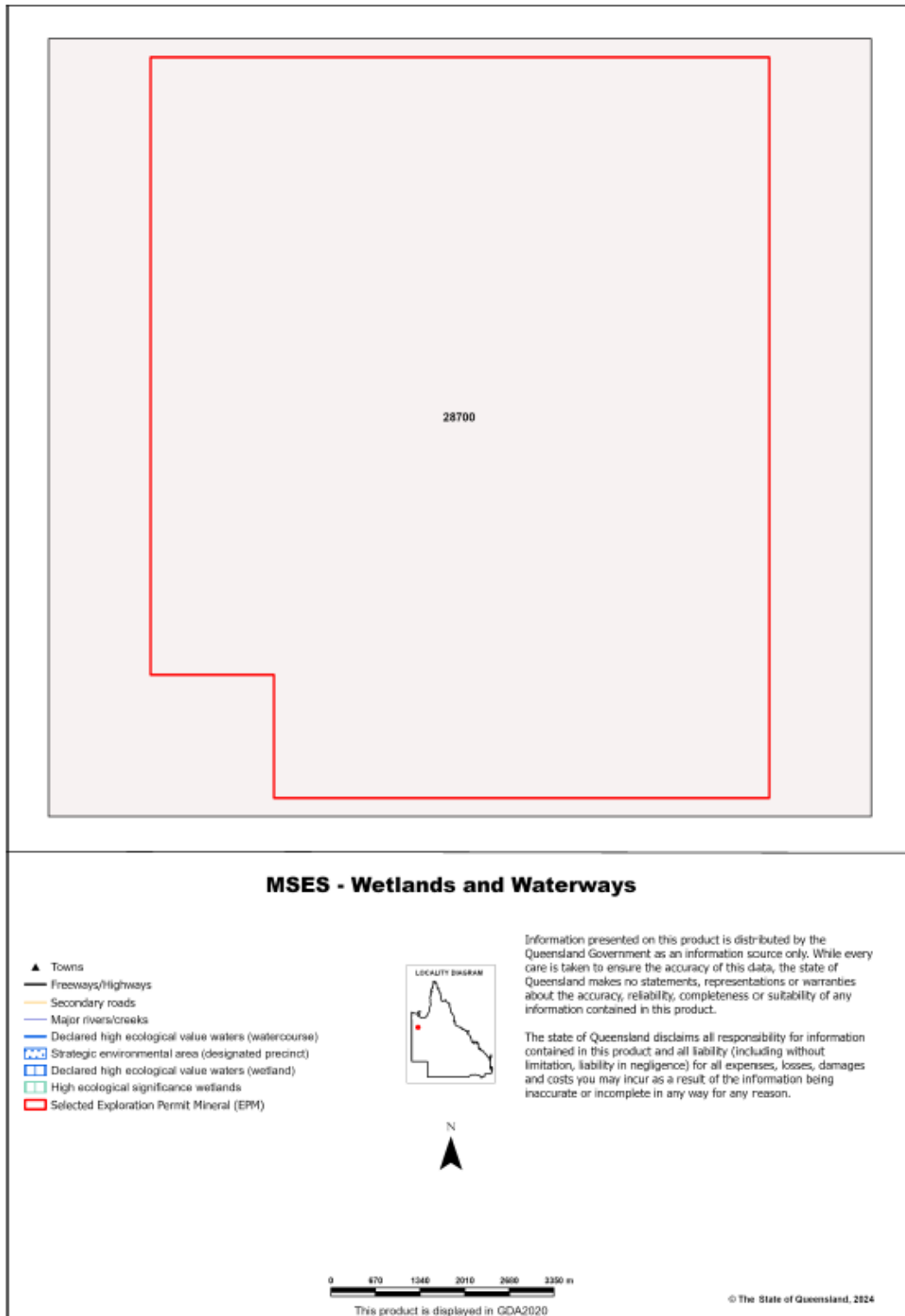


Figure 5. The Desert Project and Wetlands of Ecological Significance

3.3 Geomorphology

EPM28700 is located within the Northwest Highlands Bioregion and the subregion of Mount Isa Inlier (DES, 2024a). EPM28700 lies within the Nicholson and Leichhardt catchment (DES, 2024a).

3.4 Vegetation Communities

The environmental Regional Ecosystem (RE) reports generated for EPM28700 (DES, 2024a) indicate that five vegetation communities are present within the licenses as shown in Table 4.

BVG (1 Million)	Description	Area (Ha)	% of AOI
14b	Woodlands dominated by <i>Eucalyptus tetrodonta</i> (Darwin stringybark) (or <i>E. megasepala</i> (Melville Island bloodwood)) or <i>E. chartaboma</i> (or <i>E. miniata</i> (Darwin woollybutt)), with <i>Corymbia clarksoniana</i> (grey bloodwood) on erosional surfaces, residual sands and occasionally alluvial plains.	3,769.64	40.26
19a	Low open woodlands dominated by <i>Eucalyptus leucophloia</i> (snappy gum) with <i>Triodia</i> spp. dominated ground layer, mainly on hills and ranges.	4,079.31	43.57
19b	Low open woodlands dominated by <i>Eucalyptus leucophylla</i> (Cloncurry box) or less extensively <i>Corymbia terminalis</i> (long-fruited bloodwood) low open woodlands and related associations, mainly lower slopes and valleys.	94.32	1.01
19c	Low open woodlands dominated by <i>Eucalyptus pruinosa</i> low open woodlands on sandplains, outwash areas and lateritised surfaces.	173.60	1.85
24a	Low woodlands to tall shrublands dominated by <i>Acacia</i> spp. on residuals. Species include <i>A. shirleyi</i> (lancewood), <i>A. catenulata</i> (bendee), <i>A. microsperma</i> (bowyakka), <i>A. clivicola</i> , <i>A. sibirica</i> , <i>A. rhodoxylon</i> (rosewood) and <i>A. leptostachya</i> (Townsville wattle).	1,246.00	13.31

Table 4: Vegetation Communities within EPM28700

Each of the vegetation types have a biodiversity status of “No concern at present” shown in Table 5.

EPM 28700

Biodiversity Status	Area (Ha)	% of AOI
Endangered	0.00	0.00
Of concern	0.00	0.00
No concern at present	9,362.86	100.00
Total remnant vegetation	9,362.86	100.00

Table 5: Biodiversity Status of Vegetation within EPM28700

Table 6 below identifies the remnant regional ecosystems and vegetation communities mapped within EPM28700, and provides their short descriptions, Biodiversity Status, and remnant extent within EPM28700 (DES, 2024a).

EPM 28700

Regional Ecosystem	Short Description	BD Status	Area (Ha)	% of AOI
1.11.2a	Eucalyptus leucophloia low open woodland	No concern at present	782.28	8.36
1.3.15	Eucalyptus pruinosa low woodland on recent alluvium	No concern at present	39.24	0.42
1.3.6e	Corymbia aparrerinja, Corymbia terminalis woodland on sandy levees	No concern at present	94.32	1.01
1.5.1	Eucalyptus miniata woodland on red earths on laterised plateaus	No concern at present	3,769.64	40.26
1.5.13	Eucalyptus pruinosa low open woodland on older alluvial and residual soils	No concern at present	134.36	1.44
1.5.3	Eucalyptus leucophloia low open woodland to woodland on sandy and gravelly red soils	No concern at present	66.92	0.71
1.7.1a	Eucalyptus leucophloia low open woodland on silcrete and lateritic surfaces	No concern at present	195.32	2.09
1.7.5a	Acacia shirleyi low woodland on lateritic scarps and hills	No concern at present	923.52	9.86
1.7.5b	Acacia shirleyi low woodland on lateritic scarps and hills	No concern at present	322.48	3.44
1.7.7a	Corymbia capricornia +/- Eucalyptus leucophloia or E. miniata low open woodland on silcrete	No concern at present	654.53	6.99
1.7.7b	Corymbia capricornia +/- Eucalyptus leucophloia or E. miniata low open woodland on silcrete	No concern at present	2,380.25	25.42

Table 6: Remnant Regional Ecosystem, Descriptions and Status within EPM28700

1a Protected Areas- estates	0 ha	0.0%
1b Protected Areas- nature refuges	0 ha	0.0%
1c Protected Areas- special wildlife reserves	0 ha	0.0%
2 State Marine Parks- highly protected zones	0 ha	0.0%
3 Fish habitat areas (A and B areas)	0 ha	0.0%
4 Strategic Environmental Areas (SEA)	0 ha	0.0%
5 High Ecological Significance wetlands on the Map of Queensland Wetland Environmental Values	0 ha	0.0%
6a High Ecological Value (HEV) wetlands	0 ha	0.0%
6b High Ecological Value (HEV) waterways	0 km	Not applicable
7a Threatened (endangered or vulnerable) wildlife	0 ha	0.0%
7b Special least concern animals	0 ha	0.0%
7c i Koala habitat area - core (SEQ)	0 ha	0.0%
7c ii Koala habitat area - locally refined (SEQ)	0 ha	0.0%
7d Sea turtle nesting areas	0 km	Not applicable
8a Regulated Vegetation - Endangered/Of concern in Category B (remnant)	0 ha	0.0%
8b Regulated Vegetation - Endangered/Of concern in Category C (regrowth)	0 ha	0.0%
8c Regulated Vegetation - Category R (GBR riverine regrowth)	0 ha	0.0%
8d Regulated Vegetation - Essential habitat	0 ha	0.0%
8e Regulated Vegetation - intersecting a watercourse	96.9 km	Not applicable
8f Regulated Vegetation - within 100m of a Vegetation Management Wetland	0 ha	0.0%
9a Legally secured offset areas- offset register areas	0 ha	0.0%
9b Legally secured offset areas- vegetation offsets through a Property Map of Assessable Vegetation	0 ha	0.0%

Table 7: Summary of MSES present within EPM28700

4. Potential Impacts on Environment Attributes

4.1 Hydrologic processes

The exploration program will be conducted during the dry season in northern Australia. Conducting works in the dry season will avoid periods of high rainfall and subsequently high flow of water across the landscape. As a result, it is expected that most seasonally inundated creeks within and around the tenement will be dry and there will be limited flow of water into the surrounding waterways.

Drilling activities will avoid rivers and riparian zones as far as practicable, providing protection to rivers and riparian zones and reducing potential changes to waterflow within the area.

Existing tracks will be used where possible; however, some new exploration tracks will need to be established for exploration drilling. New exploration tracks are proposed to be cleared with a front-end loader or similar equipment, up to approximately 4.5m wide excluding windrows. The machine will clear ground with a minimum disturbance approach, which is with the blade-up to preserve root stocks and going around larger trees wherever possible. Where this is not possible, blades down clearance will be used to clear vegetation and any outcropping rock. A rock breaker may be utilised if ground is hard or to re-open historic tracks that have degraded over time; this will be kept to a minimum.

All drill holes will be plugged on completion of drilling and the drill site rehabilitated once no more work is required on the site, where possible, rehabilitation will occur within the same dry season. These measures will ensure that the natural surface water flow patterns, stream flow and connectivity in the area will not be substantially affected during the works. The minimal disturbance intent of the exploration process is to ensure that connectivity of the stream flow within any watercourse and laterally across the landscape will be maintained following the activity.

4.2 Geomorphic processes

Disturbance in rivers and riparian zones will be avoided where possible. Access tracks may need to cross minor rivers on occasion. The disturbance to land will be rehabilitated in the same dry season, where possible. Given the proposed minimal disturbance approach, it is not expected that there would be significant, widespread, or irreversible impacts on natural geomorphic processes within the

area of proposed activity or wider tenement area as a result of the exploration activities.

Movement of water across the landscape during the wet season can be substantial with localised intense rainfall events. Adverse erosion and sedimentation can result from the waterflow when tracks and drill lines are cleared of trees, saplings and ground cover and the ground surface is disturbed. Given the proposed exploratory activity is a low impact, small scale and a temporary process, undertaken during the dry season it is not anticipated these issues will occur. Nor is the activity expected to cause long term disruption to soil profiles through earthworks or excavation. The proposed exploration activity is not anticipated to compromise the preservation of the natural erosion, transportation, and deposition of sediments by water throughout the catchment.

The preferred approach for track creation is for minimal width exploration tracks to be pushed with the dozer blade raised above the surface to reduce damage to ground cover and topsoil. Where this is not possible, the machines blade will be used to engage the ground to create the track. This “blade down” technique will be used only where necessary. Rootstock from saplings, shrubs and trees will be retained and native, mature trees will be avoided using the minimal disturbance approach. Minimal disturbance and retention of the ground layer (particularly grasses) will help facilitate a reduction in erosion potential of tracks during the following wet season. Additional management practices such as strategic flow dissipation and drainage works along the new exploration tracks will also be applied where necessary to assist in dispersing water across the landscape rather than concentrating flows that may lead to erosion and sedimentation issues along tracks.

4.3 Riparian processes

Drilling activity in riparian areas will be minimised. Consequently, it is not expected that the proposed exploration activities would have widespread or irreversible impacts on riparian function in the area of activity or the wider tenement area.

All vehicles entering EPM28700 will be subject to weed and seed control inspections to minimise the control of invasive weed species. Rehabilitation of exploration activity is anticipated to occur shortly after drilling is completed allowing for timely stabilisation of the disturbed area.

4.4 Water quality

Exploration activities will only be undertaken during the dry season. No water will be extracted from surface waterways within the tenement. Water for drilling will be sourced from established bores. If this is not possible, water for drilling will be brought into the Project Area. The chemicals utilised within drilling muds are biodegradable and therefore contamination to groundwater is unlikely. In this respect it is anticipated the physical, chemical, and biological water quality immediately downstream of the exploration activity will be consistent with water quality immediately upstream of exploration activity. The exploration methodology of minimal disturbance during the dry season will reduce the likelihood of adversely affecting riverine and non-riverine wetlands and streams water quality during wet season overland flow. There is no anticipated significant water flow across the landscape during exploration works that could lead to altered water quality in the area. Similarly, the activity will not inhibit the overflow or flow of surface water in or out of wetlands or watercourse post construction.

The proposed minimisation of exploration in close proximity to rivers and riparian zones will facilitate their protection. There are no water storage dams within the proposed area of activity.

4.5 Wildlife Corridors

The exploration activity is not anticipated to impact the preservation of the wildlife corridor function of the riparian vegetation given the activity:

- Maintains the connection between native terrestrial vegetation along and across the watercourse system to a level sufficient to provide for migration, shelter and habitat.
- Does not impede passage for aquatic/marine fauna along the water course system.

Large trees will also be preserved as much as possible during the disturbance process to ensure potential breeding places are protected.

4.6 Beneficial Flooding

The exploration activity will not compromise beneficial flooding as the proposed exploration activity does not alter the natural flow paths and the natural extent of flooding across floodplains. Establishment of drill access tracks for exploration activities will result in minimal disturbance to the ground, with negligible change to

the natural contours of the proposed area of activity. There is anticipated to be limited to no surface waterflow across the landscape during the exploration program as the exploration activities will be conducted during the dry season. Wet season overland flows are unlikely to be significantly modified or altered due to exploration activities.

5. References

BOM. (2022). Climate data online - Climate statistics for Australian locations. Bureau of Meteorology Retrieved 04/03/2022 from

www.bom.gov.au/climate/averages/tables/cw_037010.shtml

Department of Environment and Science. (2024a). Environmental Reports - Regional Ecosystems Biodiversity Status for the selected area of interest EPM28700

Department of Environment and Science. (2024b). Environmental Reports- Biodiversity and Conservation Values – Biodiversity Planning Assessments and Aquatic Conservation Assessments for the selected area of interest EPM28700

Department of Environment and Science. (2024c). Environmental reports: Matters of State Significance for the selected area of interest EPM28700

DSDMIP (2019). RPI Act Statuary Guidelines 01/14: How to make an assessment application for a regional developments approval under the Regional Planning Interests Act 2014. Department of State Development, Manufacturing, Infrastructure and Planning 2019. State of Queensland.

Ecological Survey and Management (Ecosm). (2021). Endangered Regional Ecosystem Assessment - EPM28700 (Priority Area 1)

Queensland Treasury (2020). RPI Act Statuary Guidelines 05/14: Carrying out resource activities and regulated activities in a Strategic Environmental Area. Queensland Treasury State of Queensland.

Queensland Government (2014), Regional Planning Interests Regulation 2014- Regulation