

**Rio Tinto Exploration - Proposed Exploration Drilling**

Assessment Application Report - Wagunda -  
McNamara Project (EPM 16900)

09 March 2023

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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



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 Wagunda - McNamara Project is located on Riversleigh Station which is owned by the Native Title Group Waanyi People. Riversleigh Station is located approximately 225 kilometres northwest of the City of Mount Isa. The Wagunda - McNamara Project was acquired from Ocean Magic Investments Limited. Sedimentary units and the inferred structural setting indicate favourable conditions for lead-zinc or copper mineralisation on the tenement.

The proposed exploration activities are temporary, small scale and comparatively low environmental impact.

### **1.2 The applicant**

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

### **1.3 Landholder and Tenure Details**

Exploration Permit EPM16900 was granted on 17<sup>th</sup> May 2010 to Ocean Magic Investments Ltd. EPM16900 was transferred to RTX on 25<sup>th</sup> May 2021. The existing corresponding environmental authority is EPVX00313913. RTX also have a site specific Environmental Authority under application A-EA-NEW-100385191.

The Native Title holder is the Wannai People as shown in Figure 2 below. The dominant land use is pastoralism.

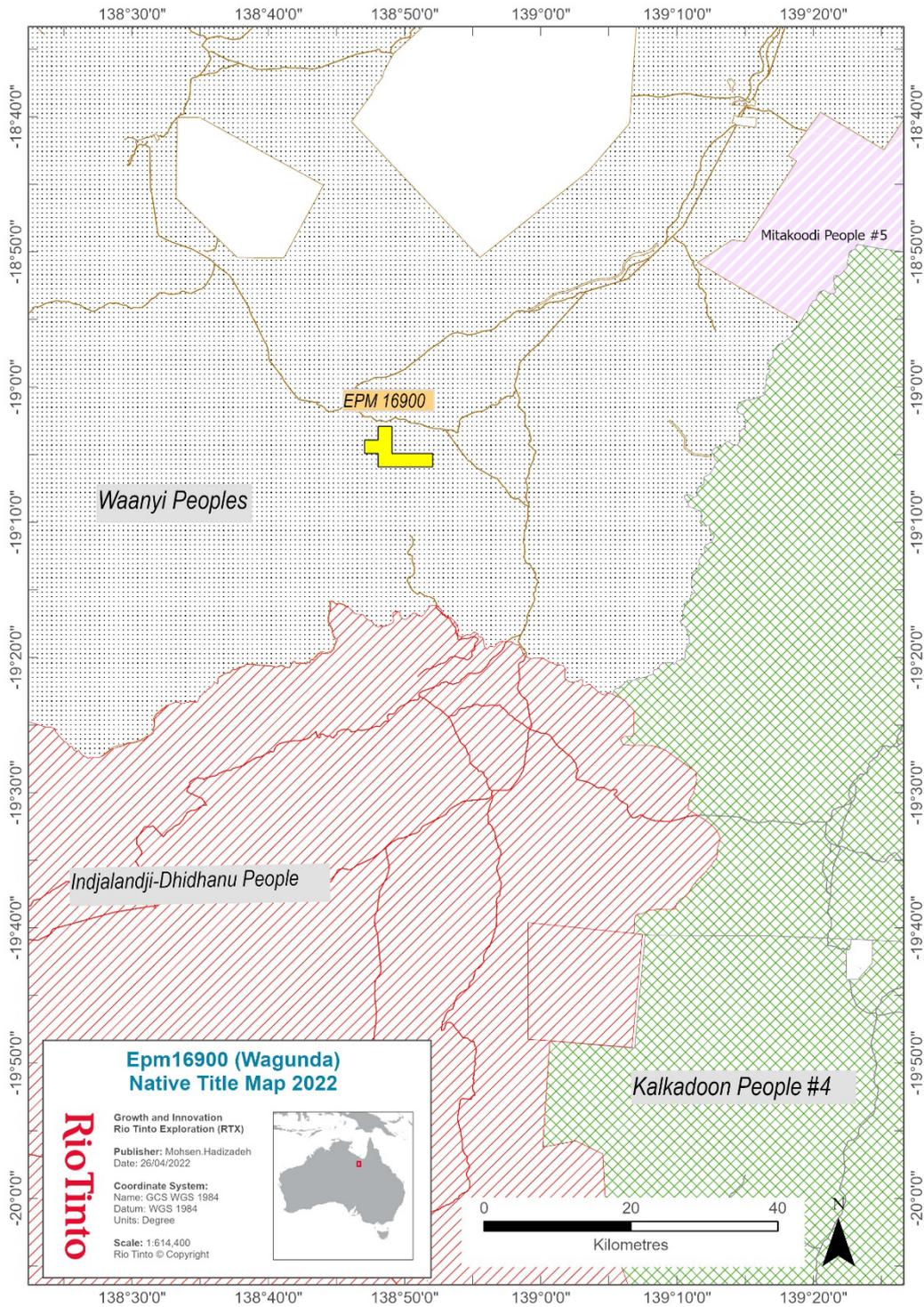


Figure 2: Native Title Area and EPM 16900

## 2. Proposed Exploration Activities

### 2.1 Drilling Program

Exploration drilling will be undertaken using conventional reverse circulation or/and diamond drilling methods.

Six drill sites are planned as shown in Figure 3. Planned drill depths are up to 300m but could potentially reach 600m depending upon units intersected. Multiple drill holes may be drilled on the same drill pad, in different orientations or for QAQC purposes. Six drill sites are required, with multiple sumps per drill site as needed for drilling. Table 1 summarises expected surface disturbance, based on 30m by 30m 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.

<b>Activity</b>	<b>length (km)</b>	<b>Width (m)</b>	<b>Area of impact (ha)</b>
Existing Tracks	2.4	4.5	1.1
Proposed Tracks	1.3	4.5	0.6
<b>Activity</b>	<b>Spacing (m)</b>	<b>Number</b>	<b>Area of impact per site (ha)</b>
Drill Site (30m X 30m)	~130 - 500	6	0.09
<b>Activity</b>	<b>length (km)</b>	<b>Width (m)</b>	<b>Area of impact (ha)</b>
Mapping and sampling	N/A	N/A	0

*Table 1: Summary of proposed exploration activities and surface disturbance*

Drilling will be completed using a truck mounted combination rig, capable of completing both reverse circulation and diamond drilling. 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.

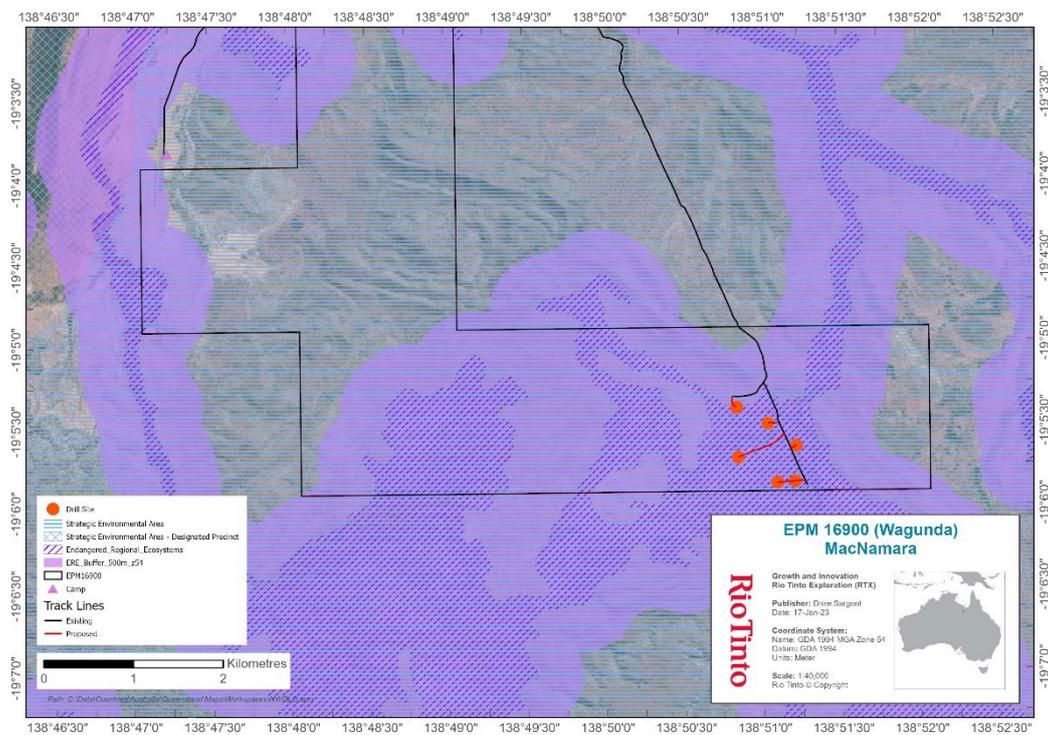


Figure 3: McNamara Drilling Targets

## 2.2 Mapping and Sampling

Mapping, including surface and rock chip sampling will be undertaken across license EPM16900 with a focus on the McNamara area of interest. Soil/gravel samples are collected from the natural land surface and are limited to approx. 2-3 kilograms each. Mapping and sampling locations will be reached by vehicle using existing tracks only and then by walking to the mapping area. No 'off-road' driving will be undertaken. If access beyond existing roads is required, it will be undertaken on foot.

## 2.3 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 small dozer (e.g., Caterpillar D6 or front loader) up to approximately 4.5m wide excluding windrows. The dozer 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.

Approximately 5 new tracks, equalling 1.3 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 where present returned. Where reasonably achievable, rehabilitation will occur prior to the onset of the next wet season, subject to seasonal constraints and equipment availability.

The main access for the project will be from the camp location north along the airstrip road, east along the Riversleigh Road, followed by existing tracks heading south into the area of interest and proposed tracks to reach drill sites.

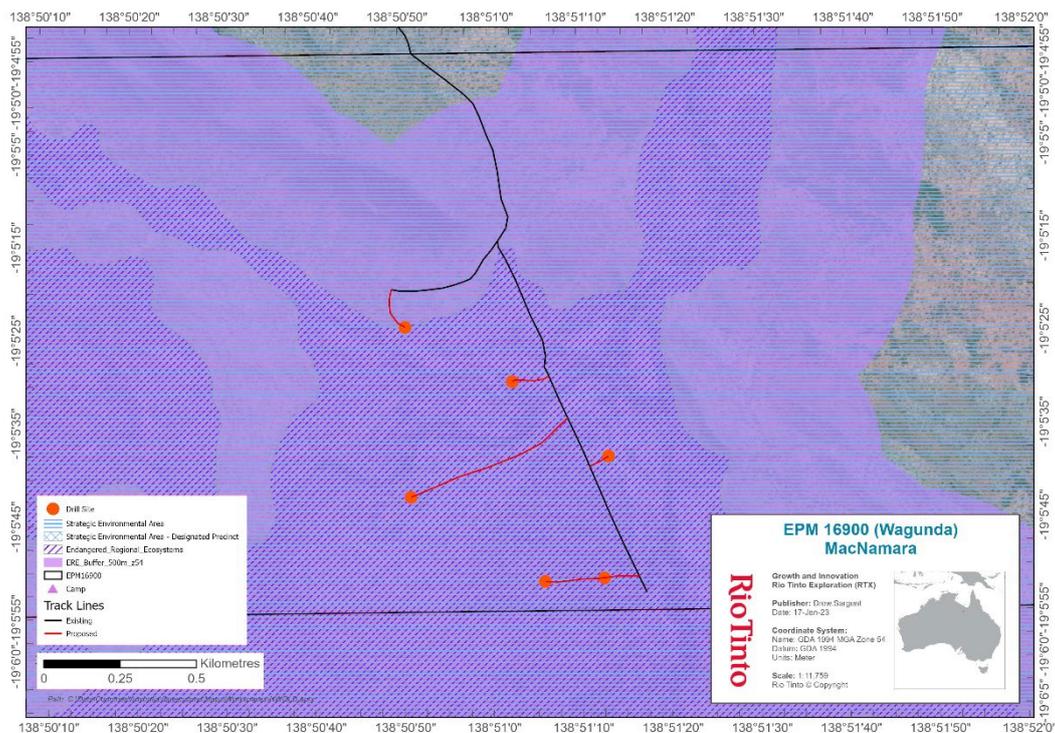


Figure 4: McNamara Project Access Roads and Tracks

## 2.4 Campsite and other facilities

A camp consisting of caravans will be established for the proposed exploration activities. All equipment for the drilling programme will be stored at the camp location in a designated area. Note the camp is located on EPM27741 held by RTX and has been approved under RPI122/06.

All rubbish generated will be removed from the Project Area and disposed of at a licenced facility.

## **2.5 Water Supply**

No water will be extracted from surface waterways within the tenement. Water for drilling will be sourced from established bores following approval from the owner. Drinking water will be purchased in nearby townships and taken to the Project Area.

## **2.6 Timing**

Exploration will be undertaken during the dry season only from April to November. The planned duration of this first programme is approximately one month. Drilling will be conducted over two shifts (day shift and night shift). A multi-purpose combination rig allows for drilling to alternate between reverse circulation and diamond drilling.

## **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 Camoweal (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
<b>Annual</b>	<b>33.0</b>	<b>17.7</b>	<b>401.3</b>

Table 2: Climate Data for EPM16900 adapted from the Bureau of Meteorology 2022

### 3.2 Hydrology

EPM16900 is located in the Gregory Wild River Area and forms part of the Nicolson catchment which covers an area of approximately 35,744 square kilometres. Brenda Creek is located approximately 500m to the north and O'Shannassy River is approximately 1.5km west of the EPM. The EPM is dissected by numerous unnamed watercourse that are mapped under the Vegetation Management Act 1999 (VM Act) as Order 1,2,3 or 4 streams. These watercourses, particularly the higher order systems have the potential to support regional ecosystems that may be classified as Endangered Regional Ecosystems (ERE's) (Ecosm, 2021).

A small area (15.33Ha) of EPM16900 intersects with Wetlands of Ecological significance as shown in **Error! Reference source not found..**

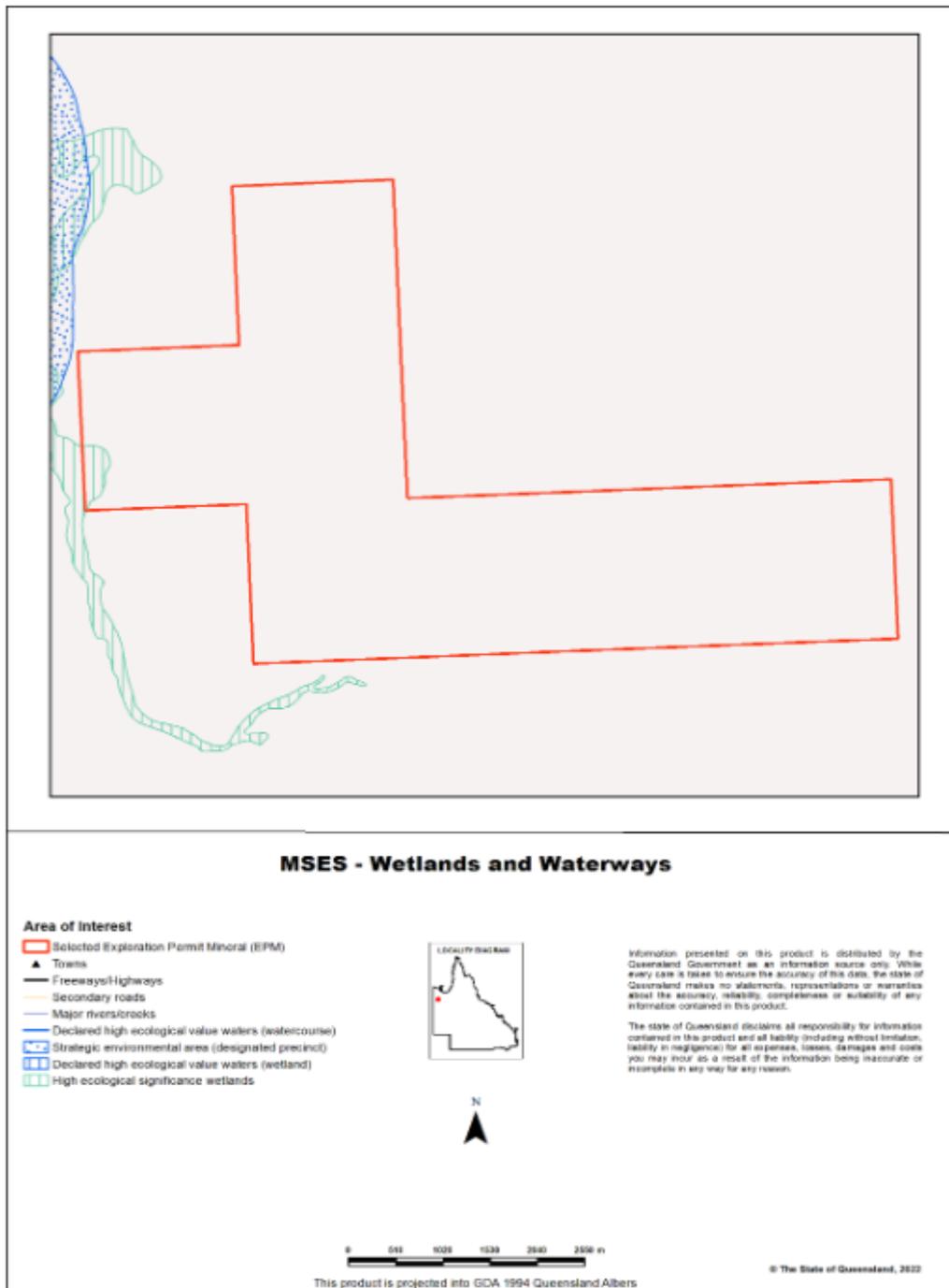


Figure 5: McNamara Project and Wetlands of Ecological Significance

### 3.3 Geomorphology

EPM16900 is located within the Northwest Highlands Bioregion and the Interim Biogeographic Regionalisation for Australia (IBRA) subregions of Thornton and Mount Isa Inlier (MII) bioregion (DES, 2022a). EPM16900 lies within the Nicholson catchment (DES, 2022a).

### 3.4 Vegetation Communities

The environmental Regional Ecosystem (RE) reports generated for EPM16900 (DES, 2022a) indicate that five vegetation communities are present within EMP16900 as shown in Table 3.

BVG (1 Million)	Description	Area (Ha)	% of AOI
16a	Open forest and woodlands dominated by <i>Eucalyptus camaldulensis</i> (river red gum) (or <i>E. tereticornis</i> (blue gum)) and/or <i>E. coolabah</i> (coolabah) (or <i>E. microtheca</i> (coolabah)) fringing drainage lines. Associated species may include <i>Melaleuca</i> spp., <i>Corymbia tessellaris</i> (carbeen), <i>Angophora</i> spp., <i>Casuarina cunninghamiana</i> (riveroak). Does not include alluvial areas dominated by herb and grasslands or alluvial plains that are not flooded. (land zone 3) (MGD, BRB, GUP, CHC, MUL, DEU, EIU, NWH, SEQ, [NET, WET]) (All bioregions except CYP and CQC)	41.01	1.81
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. (land zones 11, 7, 5, 12, 9, 10) (NWH, GUP, MGD)	1,818.85	80.3
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. (land zones 5, 11, 9, 7, 12, 3) (NWH, MGD, GUP, CHC)	46.39	2.05
19c	Low open woodlands dominated by <i>Eucalyptus pruinosa</i> low open woodlands on sandplains and outwash areas. (land zones 5, 7, 9, 11) (GUP, NWH)	249.48	11.01
30b	Tussock grasslands dominated by <i>Astrelba</i> spp. (mitchell grass) or <i>Dichanthium</i> spp. (bluegrass) often with <i>Iseilema</i> spp. on undulating downs or clay plains. (land zones 9, 3, 4, 8, [5]) (MGD, CHC, GUP, BRB, [EIU, DEU, NWH])	109.44	4.83

*Table 3: Vegetation Communities within EPM16900*

The vast majority of the vegetation types have a biodiversity status of “No concern at present” (98.19% of area). An area of 1.81% of the tenement contains an endangered Regional Ecosystem as shown in Table 4. Figure 6 depicts the exploration plan for the Wagunda-McNamara Project, which pertains to the Endangered Regional Ecosystem. There are no “Of concern” regional ecosystems present (DES, 2022a).

Biodiversity Status	Area (Ha)	% of AOI
Endangered	41.01	1.81
Of concern	0.0	0.0
No concern at present	2,224.16	98.19
Total remnant vegetation	2,265.17	100.0

*Table 4: Biodiversity Status of Vegetation with EPM16900*

The Table 5 below identifies the remnant regional ecosystems and vegetation communities mapped within EPM16900 and provides their short descriptions, Biodiversity Status, and remnant extent within EPM 16900 (DES, 2022a).

Regional Ecosystem	Short Description	BD Status	Area (Ha)	% of AOI
1.11.2a	Eucalyptus leucophloia low open woodland	No concern at present	869.32	38.38
1.3.13a	Eucalyptus leucophylla woodland on levees and minor drainage lines	No concern at present	17.64	0.78
1.3.15	Eucalyptus pruinosa low woodland on recent alluvium	No concern at present	65.32	2.88
1.3.5	Corymbia polycarpa, C. bella, C. grandifolia and Eucalyptus chlorophylla in mixed woodlands on sandy levees in the north	No concern at present	28.75	1.27
1.3.7b	Eucalyptus camaldulensis woodland on channels and levees	Endangered	31.81	1.4
1.3.7f	Eucalyptus camaldulensis woodland on channels and levees	Endangered	9.2	0.41
1.5.13	Eucalyptus pruinosa low open woodland on older alluvial and residual soils	No concern at present	184.16	8.13
1.5.3	Eucalyptus leucophloia low open woodland to woodland on sandy and gravelly red soils	No concern at present	825.0	36.42
1.7.7a	Corymbia capricornia +/- Eucalyptus leucophloia or E. miniata low open woodland on silcrete	No concern at present	124.53	5.5
2.4.1a	Dichanthium spp., Eulalia aurea, Chrysopogon fallax and Themeda avenacea in mixed tussock grasslands on Tertiary clay plains	No concern at present	109.44	4.83

*Table 5: Remnant Regional Ecosystem, Descriptions and Status within EPM16900*

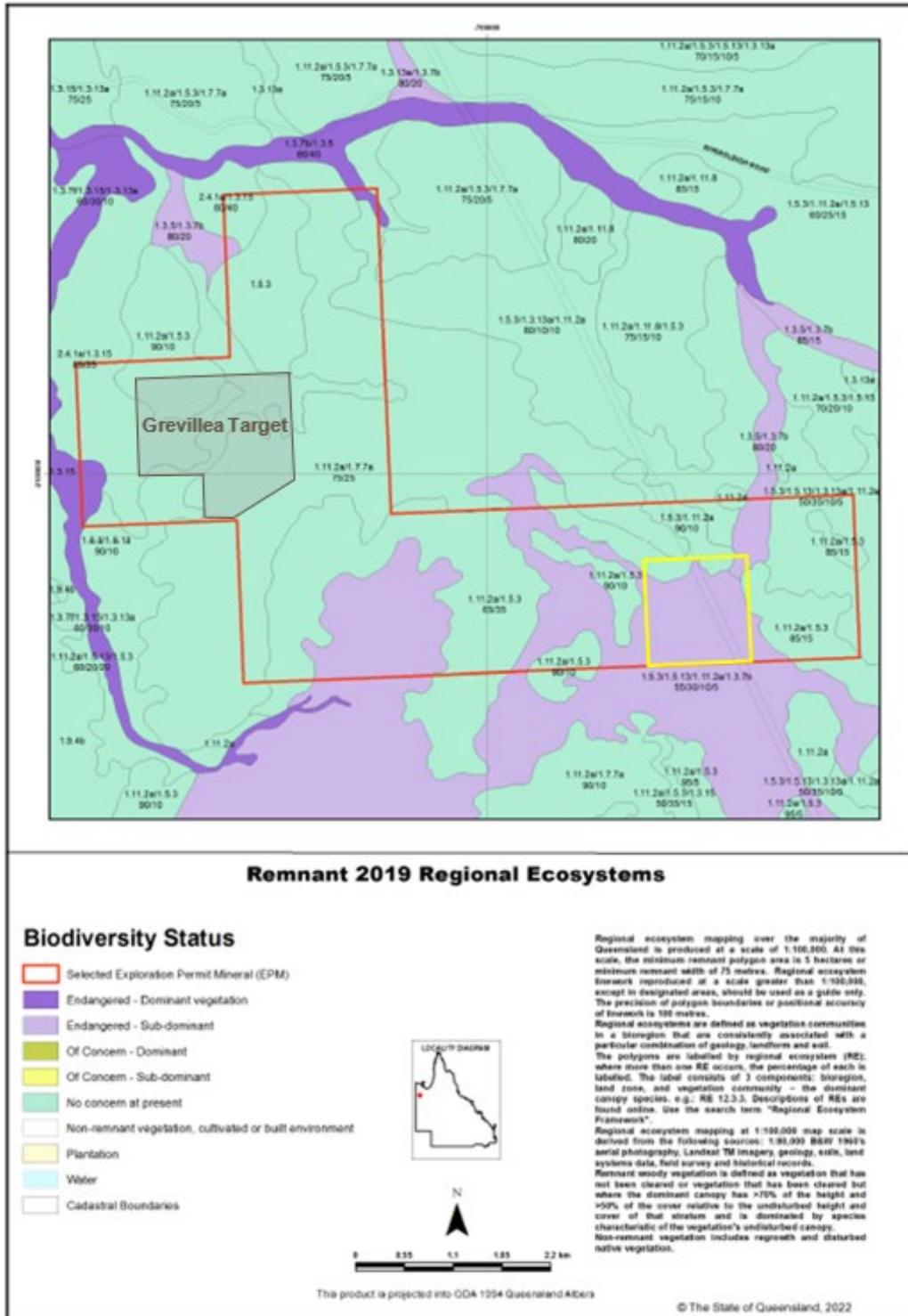


Figure 6: Proposed exploration area on EPM16900 in relation to ERE

Table 6 identifies the vegetation groups within EPM16900 and provides their short descriptions, and extent within EPM 16900 (DES, 2022a).

BVG (1 Million)	Description	Area (Ha)	% of AOI
16a	Open forest and woodlands dominated by <i>Eucalyptus camaldulensis</i> (river red gum) (or <i>E. tereticornis</i> (blue gum)) and/or <i>E. coolabah</i> (coolabah) (or <i>E. microtheca</i> (coolabah)) fringing drainage lines. Associated species may include <i>Melaleuca</i> spp., <i>Corymbia tessellaris</i> (carbeen), <i>Angophora</i> spp., <i>Casuarina cunninghamiana</i> (riveroak). Does not include alluvial areas dominated by herb and grasslands or alluvial plains that are not flooded. (land zone 3) (MGD, BRB, GUP, CHC, MUL, DEU, EIU, NWH, SEQ, [NET, WET]) (All bioregions except CYP and CQC)	41.01	1.81
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. (land zones 11, 7, 5, 12, 9, 10) (NWH, GUP, MGD)	1,818.85	80.3
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. (land zones 5, 11, 9, 7, 12, 3) (NWH, MGD, GUP, CHC)	46.39	2.05
19c	Low open woodlands dominated by <i>Eucalyptus pruinosa</i> low open woodlands on sandplains and outwash areas. (land zones 5, 7, 9, 11) (GUP, NWH)	249.48	11.01
30b	Tussock grasslands dominated by <i>Astrebla</i> spp. (mitchell grass) or <i>Dichanthium</i> spp. (bluegrass) often with <i>Iseilema</i> spp. on undulating downs or clay plains. (land zones 9, 3, 4, 8, [5]) (MGD, CHC, GUP, BRB, [EIU, DEU, NWH])	109.44	4.83

Table 6: Vegetation Groups within EPM16900

Table 7 below provides a summary of the Matters of State Environmental Significance within EPM16900.

1a Protected Areas- estates	0.0 ha	0.0 %
1b Protected Areas- nature refuges	0.0 ha	0.0 %
1c Protected Areas- special wildlife reserves	0.0 ha	0.0 %
2 State Marine Parks- highly protected zones	0.0 ha	0.0 %
3 Fish habitat areas (A and B areas)	0.0 ha	0.0 %
4 Strategic Environmental Areas (SEA)	0.0 ha	0.0 %
5 High Ecological Significance wetlands on the map of Referable Wetlands	15.33 ha	0.7%
6a High Ecological Value (HEV) wetlands	0.0 ha	0.0 %
6b High Ecological Value (HEV) waterways **	0.0 km	Not applicable
7a Threatened (endangered or vulnerable) wildlife	0.0 ha	0.0 %
7b Special least concern animals	0.0 ha	0.0 %
7c i Koala habitat area - core (SEQ)	0.0 ha	0.0 %
7c ii Koala habitat area - locally refined (SEQ)	0.0 ha	0.0 %
8a Regulated Vegetation - Endangered/Of concern in Category B (remnant)	0.0 ha	0.0 %
8b Regulated Vegetation - Endangered/Of concern in Category C (regrowth)	0.0 ha	0.0 %
8c Regulated Vegetation - Category R (GBR riverine regrowth)	0.0 ha	0.0 %
8d Regulated Vegetation - Essential habitat	0.0 ha	0.0 %
8e Regulated Vegetation - intersecting a watercourse **	33.1 km	Not applicable
8f Regulated Vegetation - within 100m of a Vegetation Management Wetland	0.0 ha	0.0 %
9a Legally secured offset areas- offset register areas	0.0 ha	0.0 %
9b Legally secured offset areas- vegetation offsets through a Property Map of Assessable Vegetation	0.0 ha	0.0 %

Table 7: Summary of MSES present within EPM16900

## **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 the tenements 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 small dozer (e.g., Caterpillar D6 or front loader) up to approximately 4.5m wide excluding windrows. The dozer 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 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.

Minimal width exploration tracks will be pushed with the dozer blade raised above the surface where possible to reduce damage to ground cover and topsoil. 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 the EPM16900 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. 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 as a result of the exploration activities.

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