

# Environmental Approval

PURSUANT TO SECTION 69 OF THE ENVIRONMENT PROTECTION ACT 2019

Approval number	EP2022/021 – 001
Approval holder	PNX Metals Limited
Australian Business Number (ABN)	67 127 446 271
Registered business address	Level 1, 135 Fullarton Road, Rose Park, South Australia, 5067

## Action: Fountain Head Gold Project

Recommence gold mining at the Fountain Head Pit. Ore is proposed to be mined using traditional drilling and blasting and truck and shovel techniques, and gold extracted using a carbon-in-pulp (CIP) process. Tailings would be co-disposed with waste rock and any potentially acid forming (PAF) waste rock would be backfilled into the pit. The life of mine is approximately 4 years and 5 months.

The action includes:

- dewatering of existing open pit through ongoing natural and forced evaporation during the mining phase
- expansion of existing open pit and mining to a pit depth of approximately 160 m
- construction of crushing facilities and gold processing plant
- construction of supporting infrastructure including workshops, power station, roads, and offices
- construction and progressive rehabilitation of the integrated waste landform (IWL).

Post closure, the Fountain Head Pit is expected to form a pit lake, with material placed at the base of the pit.

**Table 1 Description and indicative metrics for action elements provided in the EIS**

Action element	Description
Waste characterisation	a) Non Acid Forming (NAF) – total sulfur content $\leq 0.2\%$ b) Potential Acid Forming-Low Capacity (PAF-LC) - total sulfur content $> 0.2\%$ to $\leq 0.4\%$ c) PAF – total sulfur content $> 0.4\%$
Waste rock volumes	a) 12.6 Million tonnes (Mt) NAF b) 0.6 Mt PAF-LC c) 0.15 Mt PAF
Waste rock storage and disposal	a) PAF-LC – permanent storage and containment in the IWL b) PAF - temporary storage and containment at in-pit designated areas
IWL metrics	a) maximum crest height 50 m b) total capacity 20.8 Mt c) tailings volume 2.7 Mt

**Advisory notes**

- i. Approval is granted under section 69 of the *Environment Protection Act 2019* for the action to be undertaken in the manner described, including with implementation of the environmental management measures, commitments and safeguards documented in the Environmental Impact Statement (EIS) (including the Supplement to the Draft EIS). If there is an inconsistency between the EIS and this environmental approval, the requirements of this environmental approval prevail.
- ii. This approval does not authorise the approval holder to undertake an activity that would otherwise be an offence under the *Water Act 1992*.
- iii. Submission of all notices, reports, documents or other correspondence required as a condition of this approval must be provided in electronic form by emailing <mailto:environmentalregulation@nt.gov.au>

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**Address of action**NT Portion 695, Burrundie, NT  
Ban Ban Springs pastoral lease 1111

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**NT EPA Assessment Report number**

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**Decision maker**

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Hon Lauren Jane Moss MLA,  
Minister for Environment, Climate Change and  
Water Security

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**Date of approval**

15/2/23

## ENVIRONMENTAL APPROVAL CONDITIONS

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### 1 Limitations and extent of action

1-1 When implementing the action, the approval holder must ensure the action does not exceed the following limitations and extent:

Action element	Figure	Limitation or maximum extent
Land clearing	Figure 1	No more than 96 ha in total to be cleared within the <b>approved extent</b>
End of mine life <b>PAF</b> storage	N/A	In-pit <b>PAF</b> placement is at least 130 m below ground level
Groundwater drawdown	Figure 1	<1.0 m drawdown at the confluence of the southern waterway and Unnamed Creek (to the north of Mineral Lease) is the <b>limit value</b>

### 2 Action rehabilitation and closure

2-1 The action must be progressively rehabilitated and closed in such a manner that the approval holder can demonstrate that it:

- (1) is physically safe to humans and animals;
- (2) is geo-technically stable;
- (3) is non-polluting, non-contaminating;
- (4) supports productive, self-sustaining, resilient ecosystems;
- (5) achieves improvement to the local biophysical environment; and
- (6) does not cause material environmental harm or significant environmental harm.

### 3 Mine closure plan (MCP)

3-1 The approval holder must prepare a mine closure plan before **substantial disturbance** that:

- (1) achieves the outcomes in condition 2;
- (2) is consistent with contemporary best practice guidance on mine closure and transition to the agreed post-mining land use;
- (3) includes remediation of the Fountain Head Pit, IWL, and evaporation pond (including removal of contaminated material in the base and walls):
  - (a) required by condition 2-1
  - (b) required by condition 4-2(2)
  - (c) to achieve an end use of stored water suitable for stock consumption.

3-2 The approval holder must provide the **Minister** a copy of any MCP approved by the **responsible Minister** (that may supersede the version required by condition 3-1), within 10 business days of the date of the mine closure plan being approved.

#### 4 Terrestrial environmental quality

4-1 The approval holder must implement, remediate and complete the action to meet the following environmental objectives and outcomes:

(1) Protect the quality and integrity of land and soils so environmental values of the **Adelaide River Catchment** are supported and maintained.

4-2 To support the achievement of condition 4-1(1):

- (1) at the end of mining, the approval holder is required to assess the **approved extent** of the action for contamination in accordance with the National Environment Protection (Assessment of Site Contamination) Measure (as amended);
- (2) if the environment is contaminated above the baseline contamination assessment conducted prior to **substantial disturbance**, it must be remediated in accordance with the CRC CARE National Remediation Framework prior to closure of the action;
- (3) at all times contamination of land and soils must be avoided or minimised by shutting off the evaporators during **unfavourable wind conditions**, as determined by automated continuous weather monitoring and annual monitoring of soils for contaminants of concern including but not limited to salinity and arsenic.

#### 5 Inland water environmental quality and hydrological processes

5-1 The approval holder must implement and complete the action to meet the following environmental objectives and outcome:

- (1) protect the quality of groundwater and surface water so that environmental values including ecological health, land uses, and cultural values are maintained; and
- (2) **passive discharge** of any mine-affected water from the action must not cause groundwater and surface water quality to exceed the guideline values (**ANZG**), beyond the **approved extent**.

5-2 To support the achievement of condition 5-1(1) the evaporation pond must be:

- (1) constructed and operated with a wall crest height, spillway level and freeboard in accordance with **ANCOLD** guidelines;
- (2) lined before dewatering of the pit commences with compacted clay material to achieve a saturated hydraulic conductivity of less than  $1 \times 10^{-8}$  m/s over a minimum thickness of 0.5 m;
- (3) operated in accordance with the proponent's **trigger action response plan** including management responses to exceedances in operational groundwater level and quality triggers in relation to dewatering; and
- (4) remediated and rehabilitated at end of mining in accordance with the MCP required by condition 3-1 and the requirements of condition 4-2.

5-3 To support the achievement of condition 5-1(1) the **PAF** waste within the **Fountain Head Pit** containing >0.4% total sulfur must be:

- (1) differentiated and segregated from low capacity **PAF** and **NAF** waste;
- (2) temporarily stored and isolated in 1 of 3 separate storage areas within the pit perimeter during the mining phase; and
- (3) permanently stored at the base of the pit under a water cover at the end of mining and completion of rehabilitation.

- 5-4 To support the achievement of condition 5-1(2):
- (1) the guideline values for surface water quality are the **ANZG** freshwater default guideline values for slightly to moderately disturbed systems 95% species protection level;
  - (2) the guideline values for groundwater quality are the **ANZG** freshwater default guideline values 80% species protection level; and
  - (3) where natural background levels exceed **ANZG** freshwater default guideline values, or default guideline values have not been set by **ANZG**, site-specific guideline values must be derived in accordance with **ANZG**.
- 5-5 The site-specific guideline values required by condition 5-4(3) must be:
- (1) derived prior to any **substantial disturbance**, from the collected baseline water quality dataset; and
  - (2) derived for the physical and chemical indicators appropriate to the mineralogical properties of mined material and the range of declared beneficial uses, in accordance with **ANZG**.

## 6 Integrated waste landform (IWL)

- 6-1 The IWL must be designed and constructed to:
- (1) limit seepage in the area of tailings with the use of liner materials to achieve a saturated hydraulic conductivity of less than  $1 \times 10^{-8}$  m/s over a minimum thickness of 1.0 m; and
  - (2) include an underdrainage system within the IWL to collect and manage seepage and leachate.

## 7 Quality assurance / quality control for waste rock characterisation

- 7-1 The approval holder must conduct an audit of quality assurance / quality control procedures and waste rock identification and handling performance 12 months after **substantial disturbance**, and at 12 monthly intervals thereafter, for the **life of the action**.
- 7-2 The findings of 7-1(1) must be submitted to the **Minister** within three months of conducting the audit.
- 7-3 The audits and reporting required must be undertaken by an **independent qualified person**.

## 8 Erosion and sediment control

- 8-1 The approval holder must submit to the **Minister** an Erosion and Sediment Control Plan (**ESCP**) prior to commencement of **substantial disturbance** that is:
- (1) developed by a Certified Professional in Erosion and Sediment Control (**CPESC**), in accordance with International Erosion Control Association Australasia (IECA) 2008, *Best Practice Erosion and Sediment Control*;
  - (2) implemented for the **life of the action**; and
  - (3) revised by a **CPESC** prior to 30 September in any calendar year during the **life of the action**, and in the event that site conditions change significantly from those considered within the **ESCP**.

- 8-2 All erosion and sediment control measures, including drainage control measures, must be maintained in proper working order at all times during their operational life.
- 8-3 The approval holder must report on its compliance with the **ESCP** and conditions 8-1 and **8-2**. Each report must:
- (1) be prepared by a **CPESC**;
  - (2) cover a reporting period from 1 October to 30 April in any calendar year during the **life of the action**; and
  - (3) be submitted to the **Minister** by 31 May in any calendar year during the **life of the action** unless otherwise directed by the **Minister** in writing.

## 9 **Groundwater dependent ecosystems**

- 9-1 The approval holder must implement, remediate and complete the action to meet the following environmental objective:
- (1) Protect **groundwater dependent ecosystems** to maintain environmental values including biodiversity, ecological integrity and ecological functioning.
- 9-2 To support the achievement of condition 9-1(1) the approval holder must:
- (1) develop and implement an environmental monitoring program that includes measures for monitoring of the potential impacts of the action on **groundwater dependent ecosystems** that are within the zone of influence of groundwater drawdown and recovery.
- 9-3 The approval holder must conduct dewatering of the pit according to a **trigger action response plan** that:
- (1) is reviewed by an **independent qualified person** to ensure it is consistent with achievement of the environmental objectives and outcomes required by condition 9-1(1);
  - (2) is submitted, with the review and a statement addressing how the reviewer's findings have been addressed, to the **Minister** at least three months before **substantial disturbance**;
  - (3) is implemented for the **life of the action**;
  - (4) specifies quantitative **limit values** to demonstrate compliance with condition 9-1(1);
  - (5) includes quantitative **trigger values** to initiate contingency and/or management actions to ensure achievement of the environmental objective in condition 9-1(1);
  - (6) includes contingency and/or management actions for exceedances of **trigger values** and **limit values**; and
  - (7) identifies requirements for notifying the **Minister** on any exceedance of **trigger values** or **limit values**, including:
    - (a) date, time and cause of any exceedance;
    - (b) any contingency and/or management actions implemented;
    - (c) the outcomes of investigative, contingency and/or management actions, stop work or recommencement actions; and
    - (d) a timeframe within which the **Minister** would be notified.

- 9-4 To support the achievement of condition 9-2(1) the approval holder must:
- (1) prior to commencement of dewatering of the pit, expand the groundwater monitoring network with **key bores** to monitor seepage, water level and quality of groundwater.
  - (2) prior to **substantial disturbance**, prepare a baseline **groundwater dependent ecosystem** characterisation report that includes at a minimum:
    - (a) seasonal **baseline data** for surface water flows and quality in waterways and/or waterbodies that could be affected by the action;
    - (b) seasonal **baseline data** for groundwater levels and quality in aquifers that could be affected by the action;
    - (c) vegetation assessment for the terrestrial **groundwater dependent ecosystems**; and
    - (d) aquatic value characterisation for the aquatic **groundwater dependent ecosystems**.
  - (3) implement monitoring of the Fountain Head Pit **lake water quality** and surrounding groundwater using **key bores** for the **life of the action**;
- 10 The report required by condition 9-4(2) must:
- (1) be reviewed by an **independent qualified person** to ensure it is consistent with achievement of the environmental objectives and outcomes required by condition 9-2(1); and
  - (2) be submitted, with the review and a statement addressing how the reviewer's findings have been addressed to the **Minister** 3 months prior to **substantial disturbance**.
- 11 **Post-closure Fountain Head Pit lake water quality**
- 11-1 To support the achievement of condition 9-1(1) the approval holder must:
- (1) monitor the Fountain Head Pit **lake water quality** for a post-closure period of 15 years;
  - (2) ensure the Fountain Head Pit **lake water quality** does not exceed the **ANZG** livestock drinking water quality guideline values; and
  - (3) update, calibrate and validate the models used to predict the post closure Fountain Head Pit **lake water quality** and groundwater quality, and
  - (4) remediate the Fountain Head Pit **lake water quality** if **ANZG** livestock water quality guideline values are exceeded in accordance with the MCP required by condition 3-1 and the requirements of condition 4-2.
- 12 **Commencement of action**
- 12-1 This approval expires five years after the date on which it is granted, unless **substantial disturbance** has commenced on or before that date.
- 13 Within 10 business days of **substantial disturbance** of the action the approval holder must provide notification in writing to the **Minister**.

**14 Change of contact details**

- 14-1 The approval holder must notify the **Minister**, in writing, of any change of its name, physical address or postal address for the serving of notices or other correspondence within 10 business days of such change.

**15 Compliance reporting**

- 15-1 The approval holder must:

- (1) Within six months of the commencement of **substantial disturbance**, obtain from an **independent qualified person**, a report on compliance with the conditions of this environmental approval; and
- (2) Obtain further such reports at regular intervals not exceeding 12 months from the report referred to in condition 15-1(1); and
- (3) Submit each report to the **CEO** within 90 days of its completion.

- 15-2 The reports required by conditions 15-1(1) and 15-1(2) must:

- (1) Be endorsed by the approval holder's Chief Executive Officer or a person delegated to sign on the approval holder's Chief Executive Officer's behalf;
- (2) Include a statement as to whether the approval holder has complied with the conditions of this approval; and
- (3) Identify all non-compliances and describe corrective and preventative actions taken.

**16 Environmental Performance Report**

- 16-1 The approval holder must submit an Environmental Performance Report to the **Minister** on completion of the **mine life**.

- 16-2 The report required by condition 16-1 must be prepared by an **independent qualified person**.

- 16-3 The Environmental Performance Report must verify and report on impacts of the action on the state of the following environmental values:

- (1) Terrestrial environmental quality;
- (2) Terrestrial ecosystems;
- (3) Inland waters including surface water;
- (4) Groundwater hydrological processes and quality;
- (5) Community and economy;
- (6) Culture and heritage; and
- (7) the whole of environment within the area of influence of the action.

- 16-4 The Environmental Performance Report must include:

- (1) a comparison of the environmental values identified in condition 16-3 at the end of the **mine life** against the state of each environmental value prior to **substantial disturbance**;
- (2) a comparison of the predicted impacts of the action as identified in the EIS, and the actual impacts of the action as verified by **baseline data** and ongoing environmental monitoring data; and



- (3) a cumulative impact assessment on the aquatic ecosystem condition of the **Adelaide River Catchment** that includes actions for which the approval holder is responsible.

**17 Provision of environmental data**

- 17-1 All environmental monitoring data required to be collected or obtained under this environmental approval must be retained by the approval holder for a period of not less than 25 years commencing from the date that the data is collected or obtained.
- 17-2 The approval holder must, as and when directed by the **Minister**, provide any validated environmental data (including sampling design, sampling methodologies, empirical data and derived information products (such as maps) relevant to the assessment of the action and implementation of this environmental approval, to the **Minister** in the form and manner, and at the intervals specified, in the direction.

## 2 DEFINITIONS

The terms used in this approval have the same meaning as the terms defined in the *Environment Protection Act 2019* and *Environment Protection Regulations 2020*.

<b>Adelaide River Catchment</b>	The catchment area of the Adelaide River and tributaries as depicted in Figure 2.
<b>ANCOLD</b>	The Australian National Committee on Large Dams (ANCOLD) (2012), <i>Guidelines on Tailings Dams – Planning, Design, Construction, Operation and Closure and Addendum</i> (2019).
<b>ANZG</b>	ANZG 2018. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia. Available at <a href="http://www.waterquality.gov.au/anz-guidelines">www.waterquality.gov.au/anz-guidelines</a> .  Note: The ANZG (2018) Water Quality Guidelines replaces the previous ANZECC/ARMCANZ (2000) guidelines. Without updates to the <b>trigger values</b> for irrigation and general water use and as the revised livestock drinking water guidelines are yet to be published, the default guidelines values from ANZECC/ARMCANZ (2000) will apply.
<b>approved extent</b>	The extent identified in Figure 1 of this approval that is the Project area identified in the EIS and includes equipment, plant and structures, whether stationary or portable, and the land and water on which the action is situated.
<b>baseline data</b>	Environmental monitoring data includes chemical, physical and biological data collected (from studies undertaken) prior to <b>substantial disturbance</b> , that is used to characterise baseline conditions.
<b>CEO</b>	The Chief Executive Officer of the Department of Environment, Parks and Water Security [or another name for that department, which may vary from time to time], or their delegate.
<b>CPESC</b>	Certified Professional in Erosion and Sediment Control.
<b>EP Act</b>	<i>Environment Protection Act 2019</i> .
<b>ESCP</b>	Erosion and sediment control plan.
<b>groundwater dependent ecosystems (GDEs)</b>	Refers to ecosystems that are dependent on the surface expression (aquatic GDEs) or subsurface expression (terrestrial GDEs) of groundwater for all or part of their water requirements.  The riparian vegetation of the unnamed creek is mapped as a moderate likelihood terrestrial GDE and may rely on access to groundwater for its water requirements during the dry season to maintain biodiversity, ecological integrity and ecological functioning.  The billabong in the unnamed creek is mapped as a high likelihood aquatic GDE and its aquatic habitats are considered to

	rely on groundwater to maintain biodiversity, ecological integrity and ecological functioning.
<b>independent qualified person</b>	A qualified person as defined under section 4 of the <b>EP Act</b> ; and who also meets the following requirements: <ul style="list-style-type: none"> <li>a) was not involved in the preparation of the approval holder’s <b>EIS</b>; and</li> <li>b) is independent of the personnel involved in the design, construction and operation of the action; and</li> <li>c) has obtained written approval from the <b>CEO</b> to be the qualified person to satisfy the <b>independent qualified person</b> reporting requirements under this approval.</li> </ul>
<b>key bores</b>	The monitoring bores for the purpose of updating the hydrogeochemical and groundwater models, and for informing management responses and corrective actions.
<b>lake water quality</b>	The Fountain Head Pit lake water quality that is the volume weighted averaged concentration determined by profiling the pit with surface, mid-depth and bottom samples, and with profiling to be undertaken at three locations.
<b>life of the action</b>	The period of time from <b>substantial disturbance</b> until the issue of a closure certificate under section 213 of the <b>EP Act</b> , or revocation of the environmental approval by the <b>Minister</b> at the request of the approval holder under section 114 of the <b>EP Act</b> .
<b>limit value</b>	Values of monitored environmental parameters that represent the limit of acceptable impact beyond which the environmental values and objectives are not being met.
<b>mine-affected water</b>	Surface water and groundwater that is impacted or contaminated as a result of mining operations.
<b>mine life</b>	The period of time nominated by the approval holder in the <b>EIS</b> to carry out construction, operation and rehabilitation of the action, including 7 months construction, 34 months operation and 12 months rehabilitation (53 months total).
<b>Minister</b>	The responsible Minister (or delegate) under the <i>Environment Protection Act 2019</i> and Environment Protection Regulations 2020.
<b>NAF</b>	Non acid forming.
<b>NT EPA</b>	Northern Territory Environment Protection Authority.
<b>PAF</b>	Potentially acid forming.
<b>PAF-LC</b>	Potentially acid forming – low capacity
<b>passive discharge</b>	The uncontrolled discharge of <b>mine-affected water</b>

<b>responsible Minister</b>	The responsible Minister (or delegate) under the <i>Mining Management Act 2001</i> .
<b>substantial disturbance</b>	Means substantial disturbance of a mining site as defined under section 35(3) of the <i>Mining Management Act 2001</i> .
<b>trigger action response plan (TARP)</b>	The Trigger Action Response Plan in the proponent’s Groundwater Monitoring Plan as updated in accordance with condition 9 of this approval. The Trigger Action Response Plan provides the corrective actions and management responses required to be implemented to avoid and prevent significant environmental impact.
<b>trigger value</b>	Values of monitored environmental parameters that indicate when response actions are required to prevent exceedance of limit values.
<b>unfavourable wind conditions</b>	Refers to conditions when wind speeds are greater than 7.6 m/s.

### 3 LOCATION AND EXTENT OF ACTION

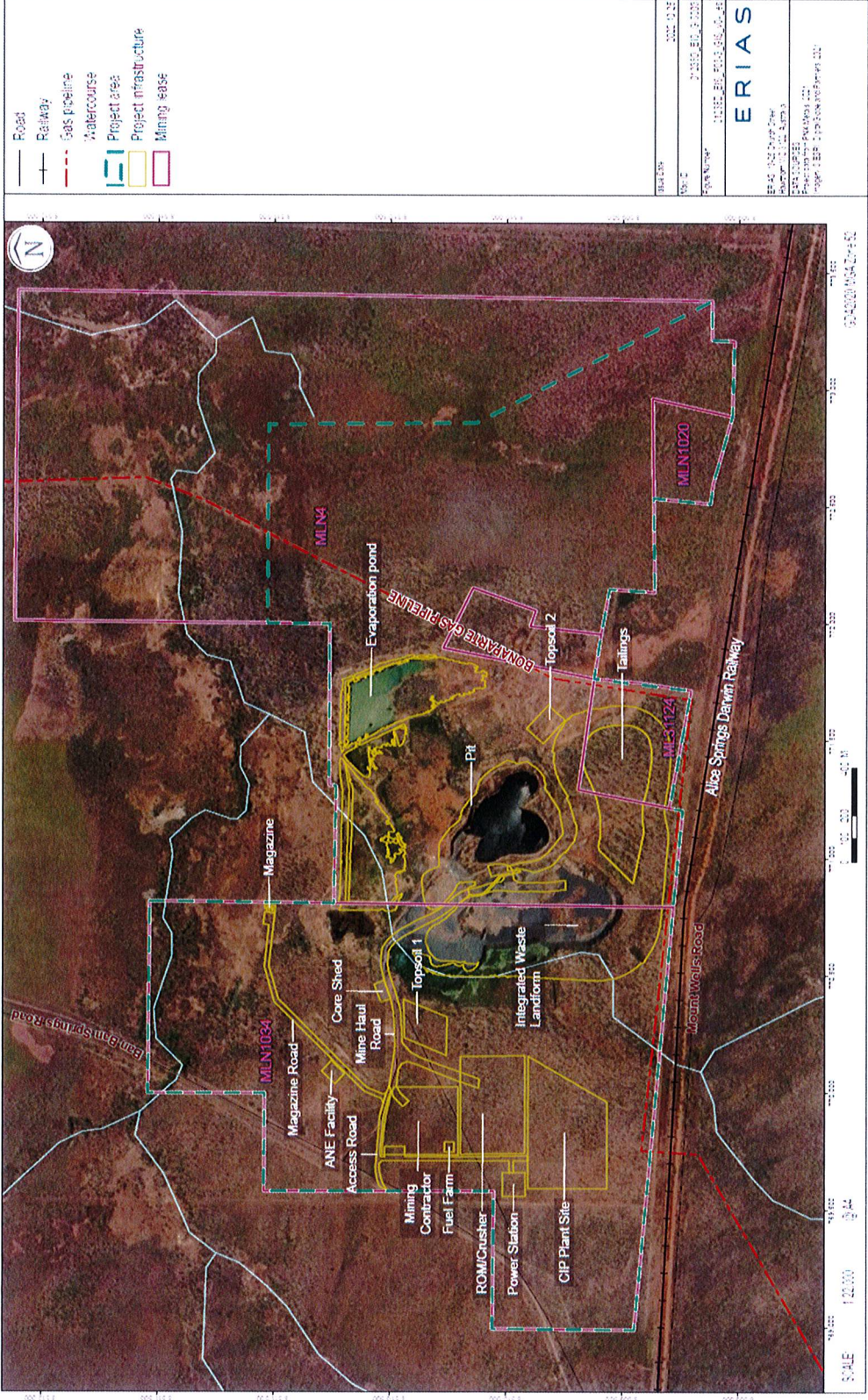


Figure 1 Proposed location of project infrastructure and mine extent

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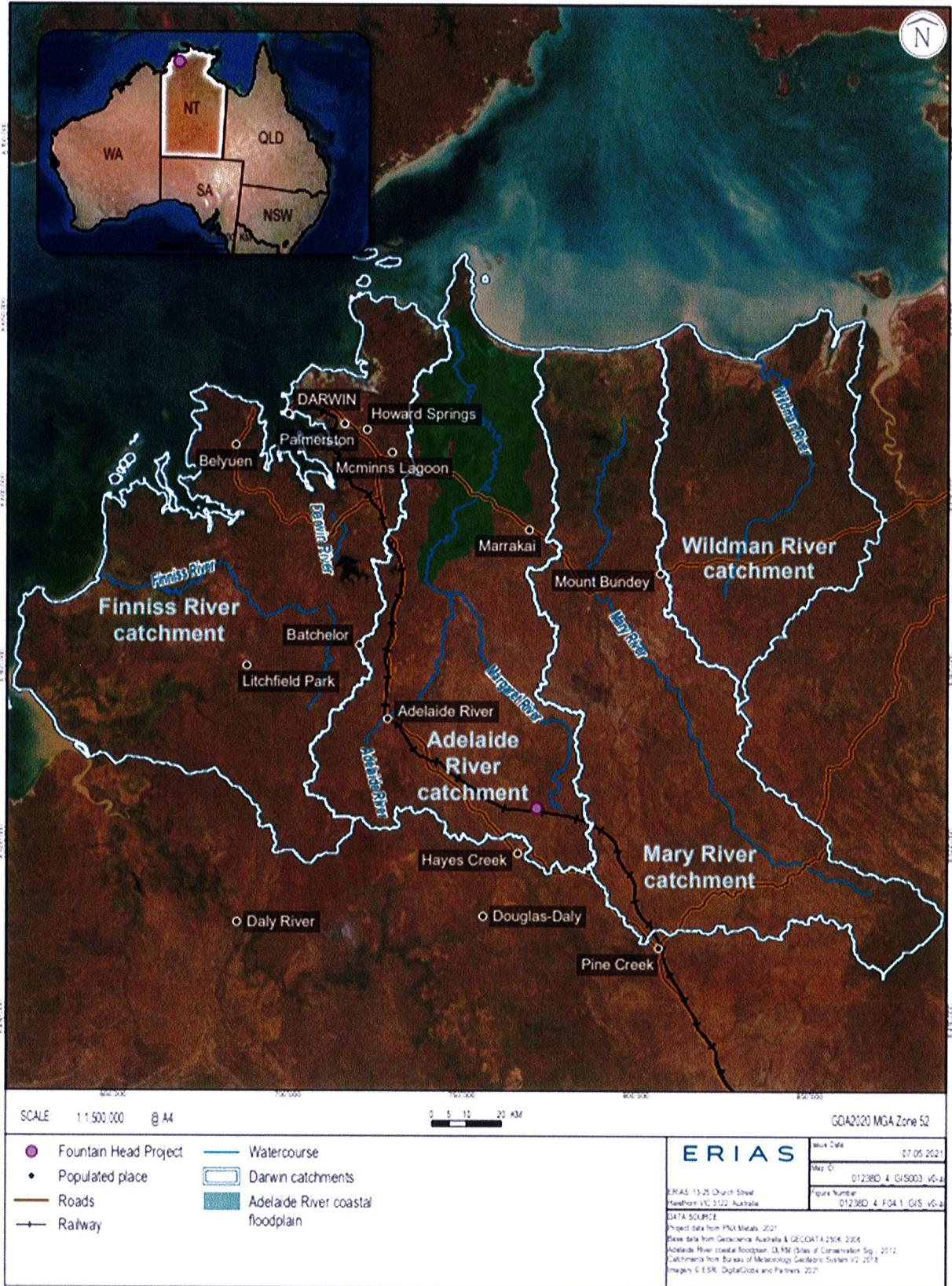


Figure 2 Adelaide River catchment and the proposal location

The spatial data depicted in Figures 1 and 2 are held by the Department of Environment, Parks and Water Security (NTEPA2019/0158-027).