NORTHERN STAR
RESOURCES LTD

Works Approval Application
Attachment 7

Siting & Location

Northern Star (Carosue Dam)

Kurnalpi - Northern Operations

May 2025

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1 Siting and Location

Northern Star Resources Limited (NSR) proposes to develop the Kurnalpi Gold Project (the Project) located approximately 75 km northeast of Kalgoorlie in the Eastern Goldfields region of Western Australia. The Kurnalpi Project is an open pit gold mining operation that will supplement ore feed and act as a satellite operation to Northern Star's's currently operating Carouse Dam approximately 40 km north east of the Kurnalpi Project.

The site can be accessed by road via Yarri Road and the Kurnalpi Pinjin Rd. The Project is located in the Kakarra Part A Native Title Determination Area. There are currently no agreements in place with the Kakarra Native Title Group. Northern Star will continue to work with representatives from Kakarra to manage Aboriginal Cultural Heritage at the Project.

The privately leased Hampton Pastoral Station (PL N049710) underlies the Project tenements (Attachment 7, Figure 7) and the pastoralist has agreed mining activities on the lease can be undertaken by Northern Star.

The prescribed premises boundary is consistent both with the Project's Disturbance Envelope described in the Mining Proposal application and the Purpose Permit Area described in the Native Vegetation Clearing Permit application, both of which are currently under assessment, concurrent with this application for assessment by the Department of Energy, Mines, Industry Regulation and Safety (DEMIRS).

2 Environmentally Sensitive Receptors

The environmentally sensitive receptors (ESRs) identified for the Project are described in the sections below.

2.1 Ecological Communities, Flora and Fauna

Three flora and vegetation studies have been conducted over the Project area which covers the extent of the project tenements and concluded the following

- No Threatened Ecological Communities or Threatened Flora species pursuant to the Environmental Protection and *Biodiversity Conservation Act 1999* (EPBC Act) Act or the *Biodiversity Conservation Act 2016* (BC Act) are present within the Project area.
- No Priority Ecological Community (PEC) listed by the Department of Biodiversity, Conservation and Attractions (DBCA) are present in the Project area.
- No DBCA listed Priority Flora were recorded in the Project area.
- No groundwater dependent ecosystems (GDEs) occur within the Project area.
- Ten vegetation communities identified and mapped across the Project area.

Four baseline fauna and habitat surveys were undertaken over the extent of the project tenements and concluded the following:

- Malleefowl *(Leipoa ocellata*) listed as Threatened (Vulnerable) under the EPBC Act or the BC Act were recorded in the baseline surveys.
- No priority Fauna listed by DBCA were recorded in the baseline surveys.
- Eight fauna habitats occur across the Project area

Impacts on flora and fauna values will be assessed by the Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) as part of the Native Vegetation Clearing Permit application.

2.1.1 Vegetation

Three flora and vegetation studies were conducted for the Project area and surrounds between 2011 and 2022.

A total of ten broad-scale vegetation communities were identified during the 2022 reconnaissance survey of which all are present within the Prescribed Premises Boundary (Figure 1).

The Protected Matters search (DAWE 2021) did not identify any Threatened Ecological Communities recorded within 40 km of the survey area.

Analysis of the Priority Ecological Communities within the Goldfields region (DBCA 2017) did not identify any significant vegetation assemblages as likely or possibly occurring within the survey area.

Subsequent field surveys identified no Threatened Ecological Communities (TECs) or Priority Ecological Communities (PECs) listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) or the *Biodiversity Conservation Act 2016* (BC Act).

According to the BoM Atlas of Groundwater Dependent Ecosystems (BoM, 2020) database, there are two moderate-potential and five low-potential terrestrial GDE's within the surveyed area, The 2022 survey found no groundwater dependent ecosystems (GDEs) occur within the project area. Depth to groundwater is approximately 36 mbgl and well the root zone of vegetation that characterises the area.

2.1.2 Flora

The assessment of the DBCA Priority/Threatened flora database records (DBCA 2019a), NatureMap (DBCA 2021) and Protected Matters searches (DAWE 2021) and previous relevant literature identified 10 significant flora species recorded within a 40 km radius of the survey area. These consist of one Threatened, three Priority 1, four Priority 2 and two Priority 3 flora taxa.

These taxa were assessed for distribution and known habitat to determine their likelihood of occurrence within the survey area. The assessment did not identify any taxa as likely to occur within the survey area. The assessment identified one Priority species, *Austrostipa blackii* (P3), as previously recorded within the survey area. In addition, three taxa were identified as possibly occurring in the survey area; consisting of one Priority 1, one Priority 2 and two Priority 3 flora taxa:

- Ptilotus procumbens (P1)
- Thryptomene eremaea (P2)
- Micromyrtus serrulata and Austrostipa blackii (P3)

No Threatened, Priority or otherwise significant flora species were recorded within the survey area.

The previously recorded *Austrostipa blackii* (P3) (Botanica, 2011) was not observed within the survey area, despite a focused search at the location of the previous record and within areas of suitable habitat. Vegetation in the vicinity of the previous record was observed to be heavily grazed (Botanica, 2022).

413,000
420,000
427,000
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6,622,000
N

Legend

Prescribed Premise Boundary

Vegetation Communities

- Cleared
- CLP-AFW1
- CLP-EW1
- CLP-EW2
- CLP-EW3
- CLP-MW1
- OD-MW1
- RH-AW1
- RH-EW1
- SLP-MW1
- SP-CW1

Scale: 1: 80,000
Original Size: A3
Aerial Imagery: Google Satellite
Grid: GDA2020 / MGA zone 51 (EPSG:7851)
0 1 2 km

Northern Star Resources Limited

Figure 1

Vegetation Communities

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\\mbssvr\working\Northern Star\Kurnalpi\Approvals\Works Approval\Attachments\Attachment 7 - Siting\GIS\NorthernStar_Kurnalpi_WA_Att7_2025.qgz
07/03/2025 F01 Vegetation Communities

2.2 Terrestrial Fauna and Habitat

Four reconnaissance and basic (includes Level 1) fauna assessments have been completed for the Project, with the most recent study produced in January 2022.

Based on vegetation and associated landforms assessed during the flora and vegetation assessment, eight broad scale terrestrial fauna habitats were identified as occurring within the survey area (Botanica 2022).

According to the EPA Environmental Factor Guideline for Terrestrial Fauna (EPA, 2016c) significant fauna includes:

- Fauna being identified as a Threatened or Priority species;
- Fauna species with restricted distribution;
- Fauna subject to a high degree of historical impact from threatening processes; and
- Fauna providing an important function required to maintain the ecological integrity of a significant ecosystem.

Habitat and distribution data was used to determine the likelihood of occurrence within the survey area (Botanica, 2022). The assessment identified three significant fauna species as potentially occurring in the survey area, consisting of two Vulnerable and one Specially Protected taxa.

The current status of some species on site and/or in the general area is difficult to determine. The following species of conservation significance can be regarded as potentially utilising the survey area for some purpose at times, based on the habitats present and, in some cases, direct observations or recent nearby records:

- Grey Falcon (*Falco hypoleucos*) - Vulnerable (EPBC Act and BC Act)

This species is sparsely recorded throughout inland Australia. Suitable habitat may be present but is unlikely to represent critical habitat. Significant impact is considered unlikely.

- Peregrine Falcon (*Falco peregrinus*) – Specially Protected (EPBC Act)

This species potentially utilises some sections of the survey area as part of a much larger home range, though records in this area are uncommon. It is considered unlikely to breed within the survey area. Significant impact is considered unlikely.

- Malleefowl (*Leipoa ocellata*) - Vulnerable (EPBC Act and BC Act)

This species is occasionally recorded in the Eastern Goldfields subregion. The majority of habitat within the survey area appears marginal/or unsuitable for breeding due to the open nature of the vegetation. However, the presence of activity within an inactive mound indicates that the species persists within the local area.

Further targeted surveys, light detection and ranging (LiDAR) analyses, and Malleefowl mound surveys conducted in 2025 confirmed the presence of habitat suitable for foraging and breeding, as well as 16 Malleefowl mounds (only three were recorded as active) within the prescribed premise boundary. All three active mounds occurred inside the haul road extent of the prescribed premise boundary (Figure 2). A review of the mound locations found that the haul road can be designed within the bounds of the prescribed premise boundary to effectively avoid Malleefowl mounds.

A subterranean fauna survey was conducted for the project area by Phoenix Environmental Sciences in February 2025. The survey found that given the lack of suitable geological and hydrogeological features within of the study area (ie. Porous geologies such as calcrete, and the low proportion of alluvium and colluvium), the study area is unlikely to support a high diversity of troglofauna, if any.

The combination of saline water and very low porosity habitat within the study area limits the likelihood of stygofauna occurring. While stygofauna have been recorded in high salinities (Bennelongia 2020), this is uncommon and highly diverse and abundant communities are only likely to occur in combination with highly

suitable geologies. This is further supported by the lack of records from the desktop review search area. While few surveys have been undertaken, the ones that have suggest no subterranean fauna are present. The research suggests stygofauna in the region are restricted to areas of suitable habitat above 29° south, with significant stygofauna communities appearing from 200 km north/ north-west/ north-east of the study area (Bennelongia 2020; Biologic 2021; Humphreys 1998).

Given the findings of the survey, the risk to subterranean fauna from development of the Kurnalpi project is low.

417,000 418,000 419,000 420,000 421,000

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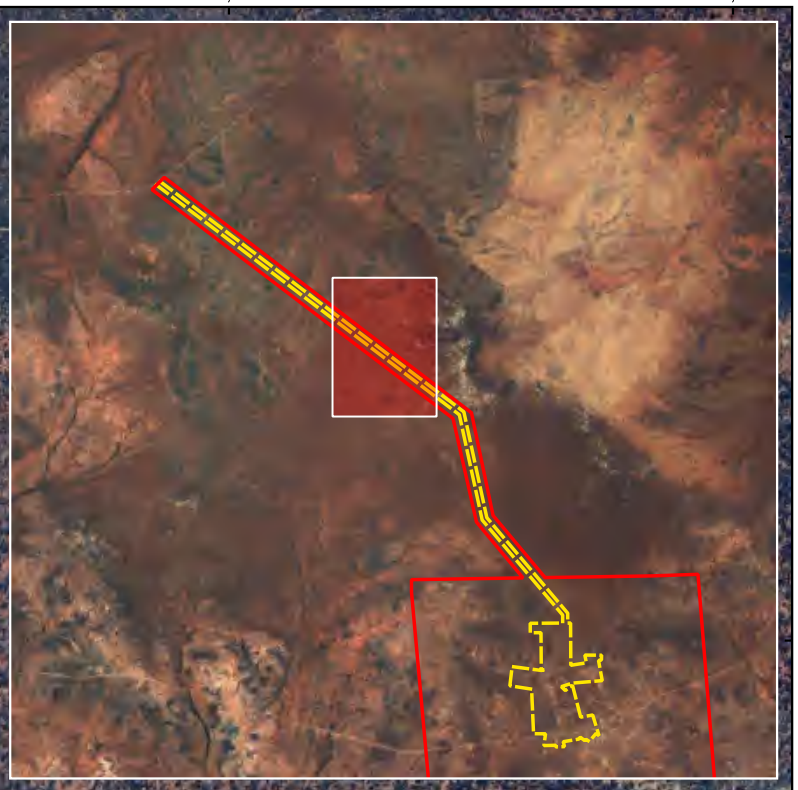

Legend

- Anditi Survey Boundary
- Prescribed Premises Boundary
- Active Mallefowl Mounds Location

Scale: 1: 15,000
Original Size: A3
Aerial Imagery: Kurnalpi Nov 2024
Grid: GDA2020 / MGA zone 51 (EPSG:7851)

0 250 500 m

Northern Star Resources Limited

Figure 2a

Active Mallefowl Mounds Locations

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\\mbssvr\working\Northern Star\Kurnalpi\Approvals\Works Approval\Attachments\Attachment 7 - Siting\GIS\NorthernStar_Kurnalpi_WA_Att7_2025.qgz 06/05/2025 F02a Active Mallefowl Mounds Locations

411,000 412,000 413,000 414,000

6,643,000 6,642,000 6,641,000 6,640,000 6,639,000

N

Legend

- Anditi Survey Boundary
- Prescribed Premises Boundary
- Active Mallefowl Mounds Locations

Scale: 1: 15,000
Original Size: A3
Aerial Imagery: Kurnalpi Nov 2024
Grid: GDA2020 / MGA zone 51 (EPSG:7851)

0 250 500 m

Northern Star Resources Limited

Figure 2b

Active Mallefowl Mounds Locations

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2.3 Public Water Sources and Water Bodies

There are no permanent water bodies or wetland systems within the prescribed premise boundary with all drainage lines being ephemeral. The nearest permanent water body is Lake Yindarlgooda, located approximately 8 km south of the Project (Figure 3).

No public drinking water source areas are located within the prescribed premise boundary.

There are no RAMSAR or wetlands of National Significance within the prescribed premise boundary.

400,000 420,000 440,000 460,000

6,640,000

6,620,000

N

Lake Yindarlgooda

Legend

- Prescribed Premise Boundary
- Lake Yindarlgooda
- Surface Hydrology

Scale: 1: 200,000
Original Size: A3
Aerial Imagery: Google Satellite
Grid: GDA2020 / MGA zone 51 (EPSG:7851)

0 10 20 km

Northern Star Resources Limited

Figure 3

Local Water Bodies and Watercourses

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2.4 Aboriginal and Other Heritage Sites

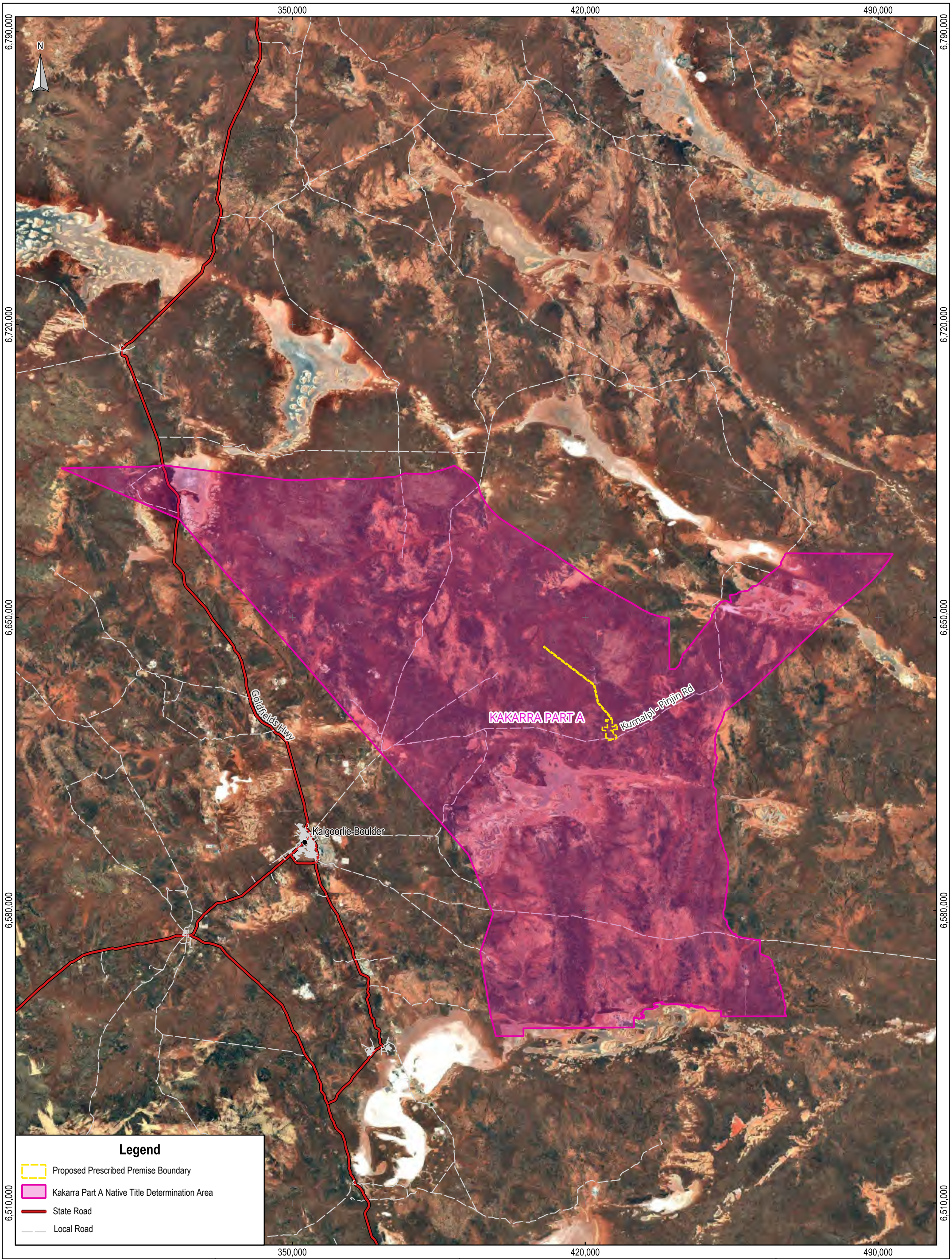
The Project is located in the Kakarra Part A Native Title Determination Area (Figure 4). There are currently no agreements in place with the Kakarra Aboriginal Corporation. Northern Star will continue to work with representatives from Kakarra to manage Aboriginal Cultural Heritage at the Project.

A search of the Department of Lands, Planning and Heritage AHIS identified no registered Aboriginal Heritage sites within the Project area. The nearest registered site, Lake Yindarlgooda, Mammu Tjukurrpa (Site 30602), is located approximately 6km southeast of the Kurnalpi Project Disturbance Envelope, and approximately 1km south of the nearest Project tenement.

A number of Aboriginal heritage surveys have been undertaken across the Project tenements and surrounding areas between 2012 and 2021. The surveys did not identify any sites of cultural significance intersecting the Kurnalpi Project Area. The most recent survey undertaken with representatives of the Kakarra Native Title Group and the Maduwongga Group, in September/October 2021, verified that there are no sacred, ritual or ceremonial Aboriginal sites within the Kurnalpi Project area.

Furthermore, there are no known burial sites or former camping sites situated within the Kurnalpi Project area. However, one Aboriginal heritage site was recorded in close proximity to L28/72, Haul Road, namely a mythological site with gnamma hole and artefact scatter components. This site has been recorded and will be avoided (R & E O'Connor, 2021).

No European Heritage sites were located that were associated with the prescribed premised boundary.



Scale: 1: 800,000
Original Size: A3
Aerial Imagery: Google Satellite
Grid: GDA2020 / MGA zone 51 (EPSG:7851)
0 10 20 km

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Figure 4

Native Title Claim Area

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06/05/2025 F04 Native Title Claim Area

2.5 Conservation Reserves and Protected Areas

The prescribed premise boundary is not associated with any conservation lands and is not located within a DBCA managed Conservation Reserve. The closest conservation reserve is Bullock Holes Timber Reserve located approximately 33 km from the Project area. Three other parks and reserves were identified within a 100 km radius of the Project however all are too far from the Project for their environmental values to be impacted.

The prescribed premise boundary or surrounding area does not contain any Environmentally Sensitive Areas as defined under the *Environmental Protection Act 1986* (EP Act).

2.6 Nearby Land Uses

Other environmentally sensitive receptors that have the potential to be impacted by the proposed activities include nearby land use such as:

- The City of Kalgoorlie-Boulder, located 75 km northeast of the Project.
- Hampton Hill Pastoral Station (PL N049710).
- Commuters and community members who access and utilise the Kurnalpi-Pinjin Road.

Nearby land users are shown in Figure 5.

340,000 360,000 380,000 400,000 420,000 440,000

6,640,000

6,620,000

6,600,000

6,580,000

N

Kurnalpi - Pinjin Rd

Hampton Hill

kalgoorlie Boulder

Legend

- Prescribed Premise Boundary
- Hampton Hill Pastoral Lease
- Nearby Land Users
- Local Road

Scale: 1: 300,000
Original Size: A3
Aerial Imagery: Google Satellite
Grid: GDA2020 / MGA zone 51 (EPSG:7851)

0 10 20 km

Northern Star Resources Limited

Figure 5

Nearby Land Users

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3 Environmental Siting Context

3.1 Climate

The Goldfields region is arid to semi-arid with average annual rainfall decreasing from about 250 mm in the south-west to 200 mm in the north-east. The area experiences hot summers and mild winters with cold nights. Rainfall varies widely between years and droughts are common. Remnants of tropical cyclones occasionally bring heavy summer rain and can cause flooding to the area. The area transitions between desert summer and winter dominated rainfall and desert: non-seasonal bioclimatic (Beard, 1990).

The closest Bureau of Meteorology (BoM) weather station to the Kurnalpi Project with comprehensive data collection and recent historic climate data is Kalgoorlie-Boulder Airport (012038).

Rainfall recorded by Kalgoorlie-Boulder Station is shown in Figure 6 and long-term climate statistics for Kalgoorlie are shown in

Table 1.

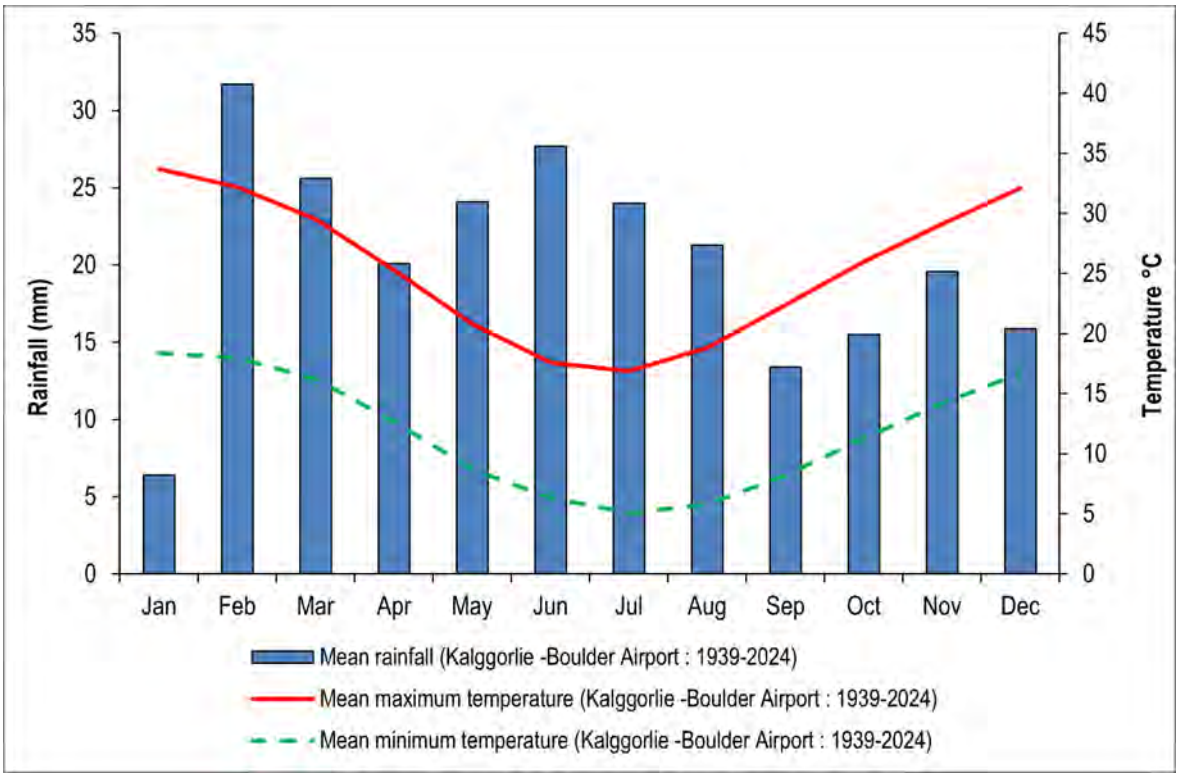

Figure 6: Climate Data (1939-2024) from Kalgoorlie-Boulder Airport weather station (012038)

Table 1: Climate Statistics for Kalgoorlie-Boulder (012038) BOM Station

Statistics	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Years
Temperature														
Mean maximum temperature (°C)	33.7	32.2	29.5	25.3	20.8	17.6	16.9	18.8	22.4	26.0	29.1	32.1	**25.4**	**1939 2024**
Mean minimum temperature (°C)	18.4	18.0	16.2	12.7	8.7	6.3	5.1	5.8	8.2	11.3	14.2	16.7	**11.8**	**1939 2024**
Rainfall														
Mean rainfall (mm)	26.4	31.7	25.6	20.1	24.1	27.7	24.0	21.3	13.4	15.5	19.6	15.9	**265.5**	**1939 2024**

Annual rainfall varies from around 150 mm up to 450 mm, with an average of approximately 270 mm/year. Rainfall is distributed fairly evenly throughout the year with an average monthly rainfall of approximately 22 mm, whilst pan evaporation is greatest in the summer months and lowest during winter.

Pan evaporation greatly exceeds rainfall with an average annual pan evaporation of around 2,600 mm. Although the average pan evaporation exceeds rainfall for the majority of the year intense rainfall events associated with cyclonic activity results in monthly rainfalls often exceeding pan evaporation. Pan evaporation data has been unavailable for this climate station since 2006.

3.2 Bioregion and Topography

Version 7 of the Interim Biogeographic Regionalisation for Australia (IBRA) divides Australia into 89 bioregions based on climate, geology, landform, native vegetation, and species information, and includes 419 subregions (Department of Climate Change, Energy, the Environment and Water, 2023). These bioregions and subregions serve as the reporting units for assessing the status of native ecosystems and their level of protection within the National Reserve System.

The Project lies within the Murchison bioregion which is divided into two sub-regions: the Eastern and Western Murchison. The Eastern Murchison is characterised by internal drainages and extensive areas of elevated red desert sandplains with minimal dune development. Salt lake systems are associated with the occluded paleodrainage system. The Western Murchison contains the headwaters of the Murchison and Wooramel Rivers which drain west to the coast.

Vegetation throughout is predominately low mulga (Acacia spp.) shrublands and mallee woodlands (Eucalyptus spp.). Grasslands occur on sandplains and comprise a range of species including acacia (i.e. A. aneura), eucalyptus (i.e. E. gongylocarpa), mallees (i.e. E. kingsmilli), bowgada (A. ramulosa), Grevillea, Melaleuca and Hakea spp. with cypress pine (Callitris columellaris) (Tille et al. 2006).

Low flat areas surrounding salt lakes comprise shrublands of samphire (Haloscarcia spp.), saltbush, sage and Frankenia spp. Along floodplains and drainages there are shrublands of bluebush (Maireana spp.) and mulga (i.e. prickly wattle and A. distans) (Tille et al. 2006).

The Project is situated in the south-east of the Eastern Murchison (MUR 1) biogeographic subregion, approximately 7 km north of the Eastern Goldfields biogeographic subregion (Desmond et al., 2002). The Eastern Murchison is characterised by internal drainage systems and extensive areas of elevated red desert sandplains with minimal dune development. Salt lake systems are associated with the southeast-trending, broad, saline palaeo-drainage systems that traverse the region and are defining features of the Yilgarn Block of south-western Australia (Gentilli, 1979).

3.3 Geology and Soils

The Kurnalpi project area is dominated by north-northwest trending greenstone belts which have been intruded by granitoid batholiths. The local geology consists mainly of basalt and komatiite lava flows interbedded with Archean sedimentary rocks, which are later intruded by granitoids and dolerite to gabbro bodes (Northern Star 2024).

The Yilgangi and Avoca Shears bound the project area to the east and west respectively. The Avoca Shear is a composite reverse fault with dominant south-west dipping planes of movement and has been interpreted as being important in structural preparation of the area for gold mineralisation. Late-stage northeast striking ductile shears transect the sequence and are interpreted to have acted as hydrothermal fluid conduits. Other fracture sets have been mapped within the region which trend north to south (Northern Star 2024). Most gold mineralisation occurs along these north-northwest trending faults. Supergene enriched and primary mineralisation occurs within the Kurnalpi area. The supergene mineralisation is flat and continuous, occurring throughout the saprolite. Primary mineralisation occurs as narrow stockwork quartz veining in carbonate-sericite-fuchsite-pyrite altered basalt and dolerite (Northern Star 2024).

The Kurnalpi deposit area has a highly variable weathering profile, with a thin transported cover of sediments over a saprolite / saprock profile which can vary between 20 and 70 m in thickness. The lithology of the basement rock is dominated by mafic (basalt) and ultramafic units with dolerite sills prevalent. The logged fresh rock materials are dominated by mafic volcanic sequences with minor felsic material. Together the mafic units and the dolerite represent approximately 94% of the logged fresh rock material within the Project Area (Soil Water Consultants 2022).

The Department of Primary Industries and Regional Development provides broad scale (1:250,000) soil landscape system mapping delineating the landscape patterns, landforms and associated major soil groups and vegetation types of WA.

The Project is located within the Kambalda Zone of the Western Australian which is described as having flat to undulating plains (with hills, ranges, and some salt lakes and stony plains) on greenstone and granitic rocks of the Yilgarn Craton (DPIRD 2023a). The predominant soil types are calcareous loamy earths and red loamy earths, along with salt lake soils, red-brown hardpan shallow loams, and red sandy duplexes.

The Kambalda Zone is distinguished from adjacent zones by its stony plains with acacia shrublands and halophytic shrublands, low hills with eucalypt or acacia woodlands accompanied by halophytic undershrubs, stony plains with acacia shrublands, and alluvial plains featuring eucalypt woodlands and halophytic undershrubs, as described in rangeland land types (Pringle, 1994).

The Project tenements span across seven land system units which are described in

Table 2 and shown in Figure 7. The majority of the proposed mining infrastructure is located within Gundockerta, Leonora, and Campsite units. The Leonora system extends across most of the eastern side of the mining area, while the western side is divided into the Campsite system in the north and the Gundockerta system in the south. The Campsite and Gundockerta systems are generally dominated by undulating plains whilst the Leonora system is characterised by low greenstone hills. All three systems are generally dominated by loamy calcareous and red earths. The North Pit is situated at the convergence of these three land systems and the Haul Road is divided roughly in equal parts, with the Kirgella system in the northern half and the Yowie system in the southern half.

Table 2: Land Systems of the Project

Land System Unit	Description	Geomorphology
Campsite	Alluvial plains supporting eucalypt woodlands with halophytic understoreys and acacia shrublands.	Alluvial plains, un-channelled drainage tracts and higher areas of stony plains.
Graves	Basalt and greenstone rises and low hills supporting eucalypt woodlands with prominent saltbush and bluebush understoreys.	Deeply weathered, low rounded hills and rises. Very gentle inclined foot slopes with pebble mantles and narrow alluvial tracts receiving tributary flow off higher units. Relief up to 40m.
Gundockerta	Extensive, gently undulating calcareous stony plains supporting bluebush shrublands.	Extensive, gently undulating plains generally with abundant stony mantles and less extensive lower alluvial plains with narrow central zones receiving more concentrated run-on, relief usually less than 15 m.
Helag	Hardpan plains and central drainage tracts with mulga shrublands and minor chenopod shrublands.	Very gentle inclined to level plains subject to sheet flow with central drainage tracks receiving more concentrated run-on.
Leonora	Low greenstone hills and stony plains supporting mixed chenopod shrublands.	Low, rounded hills and very gently inclined fringing plains with stone mantles and narrow, generally unincised tributary drainage tracts. Relief up to 40m.
Moriarty	Low greenstone rises and stony plains supporting chenopod shrublands with patchy eucalypt overstoreys.	Low rises to 20 m relief, locally with ferruginious duricrust, gently undulating lower plans with pebble mantles and level to very gently inclined alluvial plains; poorly defined, sparse drainage patterns.
Yowie	Sandy plains supporting tall shrublands of mulga and bowgada with patchy wanderrie grasses.	Extensive level plains subject to very diffuse sheet flow.

413,000
420,000
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Kirgella System
Waguin System
Waguin System
Yowie System
Campsite System
Campsite System
Moriarty System
Graves System
Gundockerta System
Moriarty System
Campsite System
Moriarty System
Illaara System
Campsite System
Leonora System
Graves System
Moriarty System
Campsite System
Gundockerta System
Yilgangi System
Campsite System
Helag System
Leonora System
Campsite System
Legend
Prescribed Premise Boundary

Scale: 1: 80,000
Original Size: A3
Aerial Imagery: Google Satellite
Grid: GDA2020 / MGA zone 51 (EPSG:7851)
0 1 2 km

Northern Star Resources Limited

Figure 7

Land Systems

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3.4 Hydrology and Hydrogeology

3.4.1 Hydrology

Kurnalpi is located within the Raeside-Ponton hydrographic catchment (Department of Water and Environmental Regulation dataset) approximately 8 km north of Lake Yindarlgooda. Surface run-off from the project area consists of small local catchments that flows to the main watercourse discharging to the Lake Yindarlgooda. As a registered Aboriginal heritage place, Lake Yindarlgooda is a known cultural receptor downstream of the project area (Department of Planning, Lands and Heritage dataset). Therefore, run-off associated with construction and operational activities needs to be assessed and managed to avoid adverse environmental and cultural impacts (flow and water quality discharging to the lake).

A local catchment delineated in RPS (2022), Kurnalpi Creek (named for the purposes of the surface water assessment report) is the main waterway which flows north to south down the western side of the proposed mine site and has a total size of 96.5 km^2 . All drainages are ephemeral, with intermittent stream flow occurring only after major rainfall.

3.4.2 Hydrogeology

The Project is located within the Roe combined Fractured Rock West - Palaeochannel groundwater resource area of the proclaimed Goldfields Groundwater area. The Yindarlgooda North and South palaeochannels converge flowing east beneath Lake Yiundarlgooda approximately 8 km south of the Project. The palaeochannel deposits consist of permeable fluvial sands and gravel from the Werillup Formation, overlain by a low permeability aquitard unit of the Perkolilli Shale, which is in turn overlain by lacustrine, playa, alluvial, and colluvial deposits. representing highly productive aquifers. flows eastwards approximately 6.5 km south of the Project area through the northern extent of the Yindarlgooda playa lake. There is no apparent palaeotributary channel associated with the tributary drainage channel west of the deposit, where alluvial and colluvial deposits overlie a weathered bedrock profile.

Groundwater at the site primarily occurs in the lower Saprolite and Saprock layers, where the thickest saturated sections are typically located in the lower topographic areas around the surface drainage and toward Lake Yindarlgooda. A significant degree of anisotropy is likely within the saprock due to structural features, including the anticline axis west of the proposed Kurnalpi pits and the Brilliant Shear Zone. Permeability is expected to be greater in the approximately north-northwest- south-southeast orientation (Pennington Scott 2025).

Standing groundwater levels recorded were generally 36 m to 38 m (vertically) below ground level, with a relatively flat gradient at about 328 m AHD. Groundwater is inferred to flow to the west south-west to discharge at Lake Yindarlgooda.

Field Electrical Conductivity (EC) and pH measurements indicate that the groundwater is brackish to moderately saline, ranging from about 3,700 to 9,000 mg/L TDS, and slightly alkaline (pH 7.1 to 8.0). Laboratory analysis of a water sample taken from the water bore at North Pit showed that the water was of a sodium chloride type, with high sulphate (1,100 mg/L) and nitrate (84 mg/L).

There are no groundwater levels recorded in the DWER Water Information Reporting (WIR) database, for locations within 30 km of Kurnalpi.

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