KARIYARRA
Aboriginal Corporation PBC

VYSARN
ASSET MANAGEMENT

KARIYARRA WATER SCHEME

Native Vegetation Clearing Permit – Supporting Document

February 2025



Document Status

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Executive Summary

Kariyarra Water Scheme

Vysarn Asset Management (VAM), in partnership with Kariyarra Aboriginal Corporation (KAC), as the Registered Native Title Body Corporate (RNTBC), have a 50:50 joint venture to develop sustainable water schemes in Kariyarra Country. This is the practical embodiment of "closing the gap": a traditional owner-owned, operated, and managed business that advances the interests of Western Australia and all its peoples.

The first water scheme project, the Kariyarra Water Scheme (KWS), seeks to sustainably abstract and manage groundwater from the Kariyarra paleochannel aquifer (a significant freshwater groundwater resource) to supply Port Hedland's Boodarie Strategic Industrial Area (BSIA). The KWS is the only feasible short to medium-term water supply option required to activate the BSIA, and it is currently subject to multi-billion-dollar industrial investments from international companies, including BP and POSCO.

The KWS project's key hydrological approvals were initiated by submitting a 5C licence application to the Department of Water and Environmental Regulation (DWER) in August 2023 per the *Right in Water and Irrigation Act 1914* (RiWI). The 5C application was specific to groundwater abstraction from the paleochannel aquifer located at the borders of Indee Station and Kangan Station, approximately 100 kilometres (km) south of Port Hedland. The paleochannel aquifer area totals approximately 9,830 hectares (ha). In June 2024, DWER issued a 26D licence approval. The 26D licence allows for the drilling and hydrological testing of the aquifer.

Construction and operation of production and monitoring bores are required to complete aquifer pump testing, hydrological modelling, and the subsequent Hydrological Assessment Report (or H3 assessment).

Native Vegetation Clearing Permit

The KWS project requires constructing production and monitoring bores and access tracks at specific spatial locations within the paleochannel aquifer, essentially along the northern boundary of Kangan Station and the southern boundary of Indee Stations, to complete the H3 report. The H3 assessment requires a detailed hydrogeological evaluation, including drilling, test pumping and groundwater modelling. 57 production and monitoring bores will be constructed to address the H3 assessment requirement.

The proposed clearing area totals 9.8 ha. The clearing areas (consisting of constructing production and monitoring bore pads and access tracks) are located at discrete (i.e., spatially non-contiguous area) locations within the larger paleochannel aquifer area (which totals approximately 9,830 ha). The discrete clearing consists of the following areas:

- 24 production bore drilling pads (totals 2.9 ha)
- 33 monitoring bore pads (totals 1.9 ha)
- 4 m wide access tracks at limited locations (totals 5 ha)

The vegetation clearing for the production bores (and some monitoring bores) and access tracks will be permanent to ensure the bores' safe and effective operation and maintenance.

The KWS Native Vegetation Clearing Permit (NVCP) application addresses the specific production and monitoring bores and associated access tracks proposed to be located within areas of intact native vegetation.

Table 1 details the NVCP application area and the specific clearing boundaries (i.e., the location of the production monitoring bores and access tracks) within the Indee and Kangan Stations.

Table 1: KWS NVCP Summary

Clearing Area	Location	Local Government	Land Use
7.6 ha	Kangan Station (LPL N049839)	Town of Port Hedland (ToPH).	• Pastoral (cattle grazing)

2.2 ha	Indee Station (LPL N050012)		• Mining activities, including mineral exploration associated with De Grey's Hemi Gold Mine
Permit Characteristics			
Purpose of the permit	Clearing for the construction of production bores, temporary monitoring bores, and access tracks required to complete a DWER H3 assessment of the paleochannel aquifer.		
Clearing Area Details	**Kangan Station**	**Indee Station**	
	17 production bore (2.1 ha) 19 monitoring bores (1.1 ha) 4.4 ha access track	7 production bore (0.8 ha) 14 monitoring bores (0.8 ha) 0.6 ha access track	
Clearing Duration	Two months		
Application Boundary	**Map Reference** (Refer to Appendix J: Application Boundary Reference Points) **Indee Station:** Indee Station Footprint Area 2.2ha **Kangan Station:** Kangan Station Footprint Area 7.6ha		

The Pastoral Lessees for Kangan Station and Indee Station support the KWS project and have granted VAM and KAC access to their pastoral leases and letters supporting this NVCP application (Appendix 1).

Figure 1 illustrates the location of the paleochannel and the proposed 9.8 ha clearing required to create production and monitoring bore pads and access tracks.

Figure 2 illustrates the discrete spatial locations of the production and monitoring bore pad sites and access tracks (totalling 9.8 ha) within the broader 9,830 ha paleochannel area.

Technical Surveys

The following baseline surveys underpin this NVCP application:

- The De Grey Hemi Gold Mine ecological surveys across the Indee Station (IBSA Number: IBSA-2024-):
  - Umwelt. (2023). Hemi Gold Deposit: Baseline Flora and Vegetation Assessment.
  - Western Wildlife. (2023). De Grey Hemi Gold Project: Detailed Vertebrate Fauna Survey 2021 - 2022.
  - Western Wildlife. (2024). De Grey Hemi Gold Project: Vertebrate Fauna Surveys 2021 - 2024.
- The KWS project ecological surveys across the Kangan Station (IBSA Number: IBSA-2024-0541):
  - Emerge Associates (2024) Technical Memorandum Detailed Flora and Vegetation Assessment Kangan Station Bore Field.
  - Emerge Associates (2024) Detailed Flora and Vegetation Assessment Kangan Station Northern Pipeline.
  - Ecological Matters (2024) Kangan Station and Northern Pipeline Terrestrial Vertebrate Fauna Assessment.

The baseline flora, vegetation and fauna surveys commissioned by De Grey Mining and for the KWS were completed in accordance with the following Environmental Protection Authority (EPA) guidelines:

- Technical Guidance: Terrestrial Fauna Surveys (EPA 2016).
- Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment (EPA 2016).

The key outcomes from the surveys are summarised below:

- Regional context
  - The proposed NVCP application area is within the Pilbara Interim Biogeographic Regionalisation for Australia (IBRA) region, with the northern portion in the 'PIL1' or Chichester subregion (DEC 2002).
  - The relevant regional Beard et al. (2013) vegetation associations include:

        - Abydos Plain – Chichester 93: Hummock grassland with scattered shrubs or mallee Triodia spp., Acacia spp., Grevillea spp. and Eucalyptus spp.
        - The remaining extent of Abydos Plain – Chichester 93 is estimated at 99.86%.
- The following units were recorded within and adjacent to the 9.8 ha proposed NVCP application area include:
    - **Kangan Station:**
        - **AaAsTl:** Sparse to open shrubland of *Acacia ancistrocarpa*, *Acacia inaequilatera* and *Grevillea wickhamii* over low open shrubland of *Acacia stellaticeps*, *Dampiera candicans* and *Ptilotus astrolasius* over closed hummock grassland of *Triodia lanigera* (Emerge 2024).
    - **Indee Station:**
        - **Vegetation Type - 10**: Tall open to sparse shrubland dominated by *Acacia ancistrocarpa*, *Acacia inaequilatera*, *Acacia sericophylla*, *Acacia acradenia* and occasionally *Melaleuca lasiandra* over low shrubland to sparse shrubland dominated by *Acacia stellaticeps* and occasionally *Sida arenicola*, *Indigofera monophylla*, *Pluchea tetranthera* and *Corchorus parviflorus* over low hummock grassland to open hummock grassland dominated by *Triodia lanigera* and/or *Triodia schinzii* on red or red-brown sandy loam on plains. (Unwelt 2023).
- The area of the mapped vegetation units AaAsTl (Kangan Station) and Vegetation Type 10 (Indee Station) totals 17,353.83 ha.
- The vegetation condition was assessed as 'Very Good' to 'Excellent'.
- No threatened or priority ecological communities occur.
- The proposed NVCP application area is within the 'Spinifex Sandplain' fauna habitat
- Fauna habitat 'Spinifex Sandplain' is described as "Spinifex hummock grassland with mixed midstorey of various shrubs *Acacia stellaticeps*, *Grevillea* sp" (Ecology Matters 2024).
- The mapped extent of Spinifex Sandplain' surveyed across the Indee and Kangan Stations totals 23,374 ha (22,162 ha within portions of Indee Station and 1,212 ha in the northern portion of Kangan Station).
- The 'Spinifex Sandplain' surveyed across the Indee and Kangan Stations (including the proposed NVCP application area) provides habitat for the following species of conservation significance listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and/or *Biodiversity Conservation Act 2016* (BC Act):
    - Fork-tailed Swift (Migratory under the EPBC Act and Division 2 under the BC Act).
    - Grey Falcon (Vulnerable under the EPBC Act and Division 3 under the BC Act).
    - Peregrine Falcon (Division 3 under the BC Act).
    - Greater Bilby (Vulnerable under the EBPC Act and Schedule 3 under the BC Act).
    - Brush-tailed Mulgara (BC Act - Priority 4).
    - Short-tailed Mouse (BC Act - Priority 4).
    - Pilbara Leaf-nosed Bat (Vulnerable under the EBPC Act and Division 3 under the BC Act).
    - Ghost Bat (Vulnerable under the EBPC Act and Division 3 under the BC Act).
    - Pilbara Grasswren.
- These species may be transient visitors within or near the NVCP application area. However, the NVCP application does not provide a habitat exclusively used by these species. The 'Spinifex Sandplain'.
- The priority flora species were recorded within Kangan Station and Indee Station (outside of the proposed 9.8 ha footprint):
    - *Abutilon* sp. *Pritzelianum* (S. van Leeuwen 5095) (P3).
    - *Euploca mutica* (P3).
    - *Triodia chichesterensis* (P3).
- The proposed clearing area does not intersect any water bodies of groundwater-dependent ecosystems

Avoidance and Mitigation Measures

The following management measures will be implemented during the clearing and the construction of the production and monitoring bore pads and access tracks:

- No clearing is permitted outside the approved NVCP area.
- Clearing will be minimised by placing the bore assets and access tracks in existing cleared locations.
- Works will be undertaken systematically to minimise re-run and compaction of access tracks.
- The clearing locations are to be demarcated with flagging tape, GPS or similar before clearing activities are commenced.
- An environmental specialist or Site Supervisor must check clearing areas before clearing to ensure no more than 9.8 ha of clearing is undertaken.
- A pre-clearing environmental toolbox will be held so all staff know their responsibilities under the approved clearing permit.
- Native vegetation will be cleared slowly and progressively in one direction, allowing fauna to move away from the clearing area.
- Vehicles and machinery will be moved in convoy along access tracks/ routes and will not enter adjacent vegetation.
- Representative(s) from the KAC will be present for the duration of the clearing and bore construction program.

Bores have been located adjacent to existing historical exploration mining tracks to avoid unnecessary clearing wherever possible and mitigate the need for additional clearing. Drill pads have been designed specifically for the different bore types, reducing the size of the monitoring bore drill pads. While the need for new access tracks has largely been avoided, the few necessary ones will be limited to 4 m in width or the minimum required for vehicles/plants, i.e., drill rigs and test pumping plants.

Conclusion

The assessment concluded that no significant environmental or social impacts would result from the clearing of up to 9.8 ha of native vegetation, compliance with the 'Ten Clearing Principles', as defined in Schedule 5 of the EP Act (DWER, 2021). This NVCP application is considered a 'very low environmental impact activity'.

Should any further information be required, please email Daniel Hay-Hendry (Project Manager) at Daniel.hay-hendry@vysarnam.com.au.

Yours sincerely



Richard Lourey
Managing Director

Vysarn Asset Management

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1. Introduction

1.1. Project Context

The Kariyarra Water Scheme (KWS) is a project developed and delivered by the Kariyarra Joint Venture (KWJV) under a 50:50 partnership between Kariyarra Aboriginal Corporation (KAC) and Vysarn Asset Management (VAM).

The KWS project aims to supply and transmit water from the Kariyarra paleochannel aquifer to primarily future industrial users within Port Hedland's Boodarie Strategic Industrial Area (BSIA). The KWS is the only water resource that can be made available to supply the BSIA in the short to medium term. The KWS provides a long-term water supply option that underpins potential BSIA proponents (and their significant industrial proposals), including POSCO's green steel project and BP's Australian Renewable Energy Hub (AREH). Without a secure water supply, the BSIA will not be a viable option for these potential BSIA proponents.

The KWJV provides a significant economic platform for the Kariyarra People with the capacity to deliver multigenerational social and economic benefits.

1.1.1. Karriyarra Paleochannel Aquifer and *Right in Water and Irrigation Act 1914* (RiWI) Approvals

The water source underpinning the KWS seeks is the Kariyarra paleochannel aquifer (the aquifer). This aquifer is in Kariyarra country, approximately 100 km south of Port Hedland, within the northern portion of Kangan Station (LPL N049839) and the southern portion of Indee Station (LPL N050012), between the Turner River and Yule River systems.

The location of the proposed borefield within the paleochannel aquifer and Indee and Kangan Stations is illustrated in Figure 1.

The KWS project requires constructing production and monitoring bores and access tracks at specific spatial locations within the paleochannel aquifer, essentially along the northern boundary of Kangan Station and the southern boundary of Indee Stations, to complete the H3 report. The H3 assessment requires a detailed hydrogeological evaluation, including drilling, test pumping and groundwater modelling. 57 production and monitoring bores will be constructed to address the H3 assessment requirement.

The proposed clearing area totals 9.8 ha. The clearing areas (consisting of constructing production and monitoring bore pads and access tracks) are located at discrete (i.e., spatially non-contiguous area) locations within the larger paleochannel aquifer area (which totals approximately 9,830 ha). The discrete clearing consists of the following areas:

- 24 production bore drilling pads (totals 2.9 ha)
- 33 monitoring bore pads (totals 1.9 ha)
- 4 m wide access tracks at limited locations (totals 5 ha)

The vegetation clearing for some production bores and access tracks will be permanent to ensure the bores' safe and effective operation and maintenance.

This NVCP application addresses the 57 production and monitoring bores and 4 m wide access tracks (at specific locations) proposed to be located within areas of intact native vegetation. The area subject to this NVCP application is no more than 9.8 ha of native vegetation.

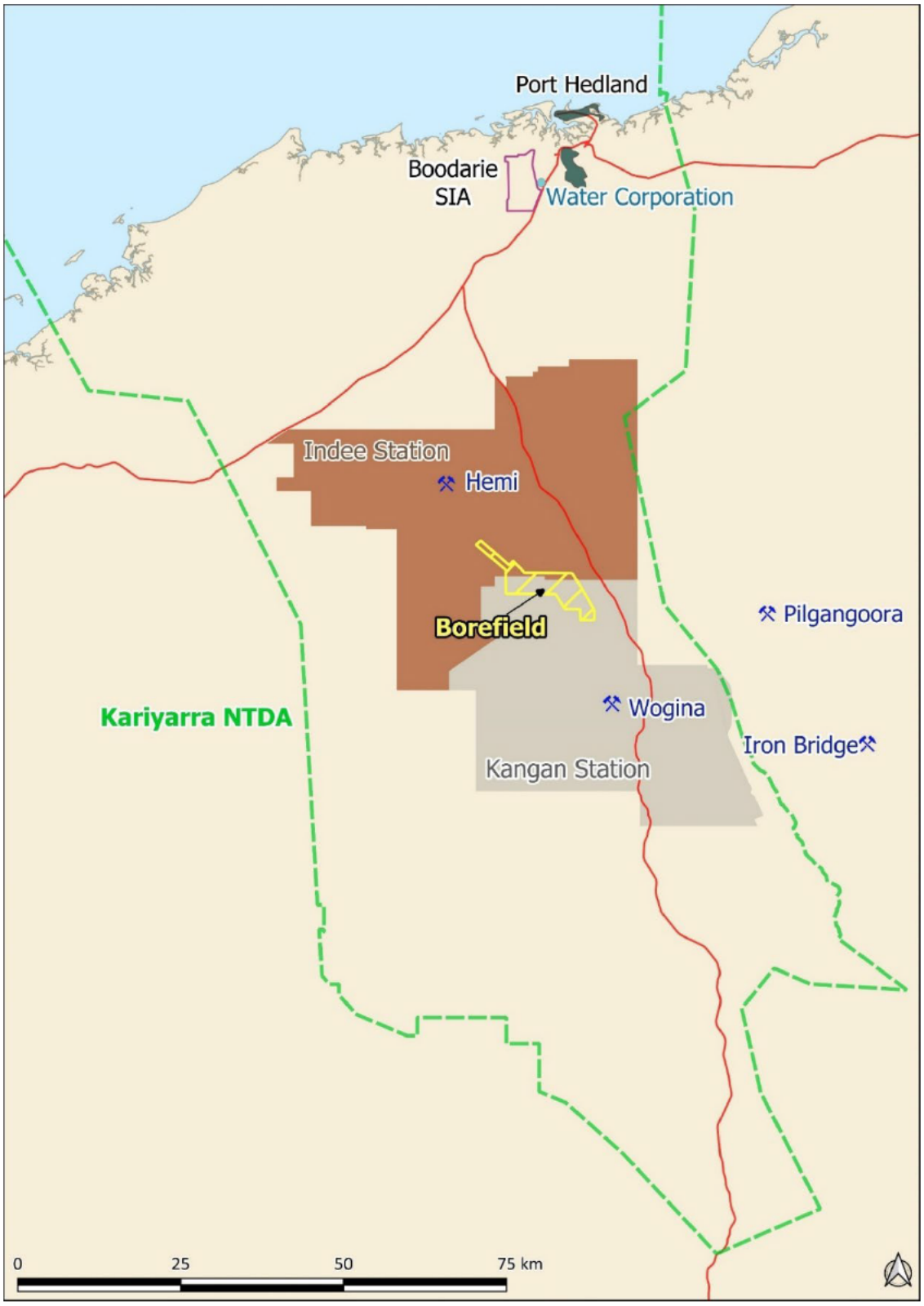


Figure 1 KWS Borefield Location

1.2. Scope and Purpose

This document has been prepared to support the KWS NVCP application. Specifically, it details the proposed construction activities associated with the DWER H3 assessment and related clearing requirements. The following information has been provided:

- A summary of the proposed clearing actions and areas and a description of the KWS project and the associated paleochannel aquifer.
- Define the avoidance, mitigation and management measures to be applied to minimise the clearing of native vegetation and reduce the likelihood of environmental impacts associated with the proposed clearing actions.

1.3. Proponent

The KWS project is managed and delivered by the Kariyarra Joint Venture (KWJV) under a 50:50 partnership between KAC and VAM.

The key contact for this proposal is:

Mr Daniel Hay-Hendry

Project Manager - Vysarn Asset Management

[redacted]

2. Proposed Clearing Activity

2.1. Location

The proposed NVCP application area is approximately 100 km south of Port Hedland, specifically at the northern border of Kangan Station and the southern border of Indee Station (Figures 1 and 2).

The NVCP application area is located entirely within the Town of Port Hedland.

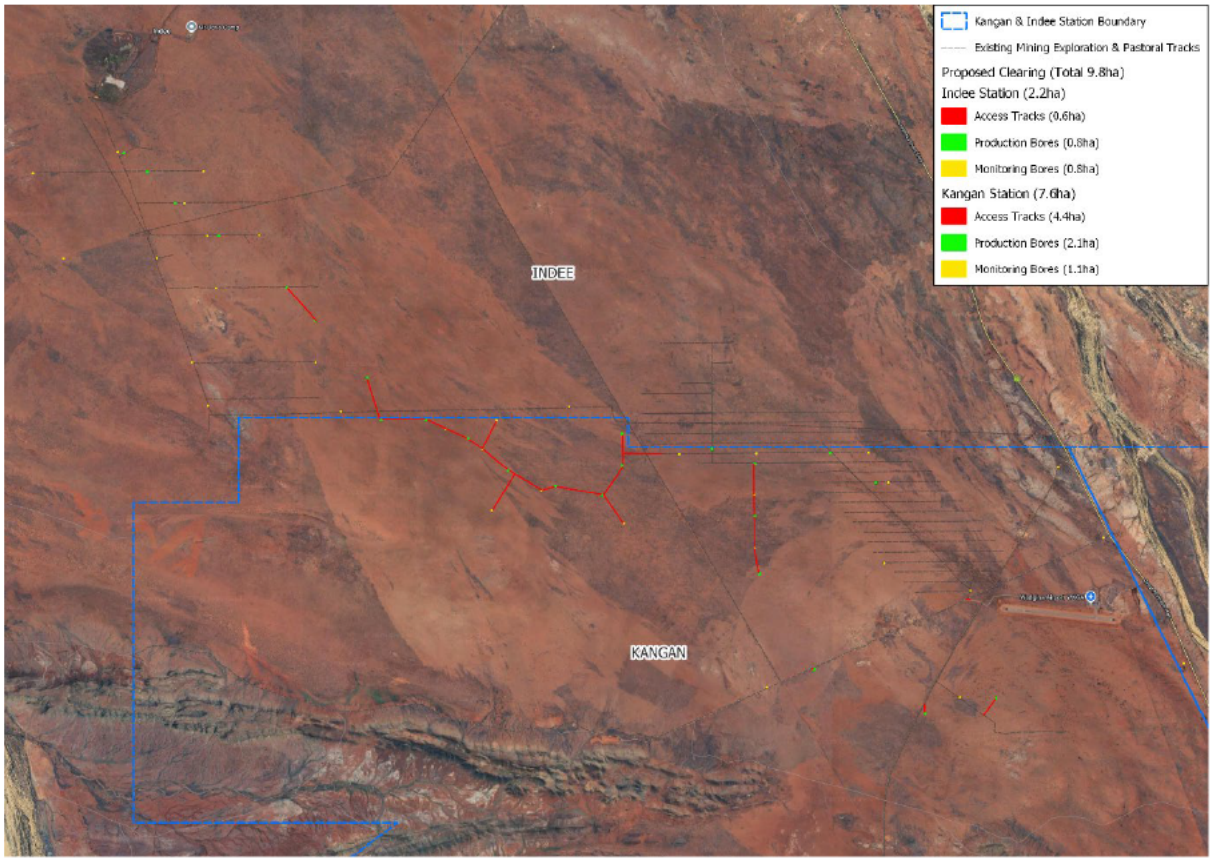


Figure 2 KWS Borefield Location

2.2. Activity Overview

The clearing areas for the production and monitoring bores are limited to largely spatially non-contiguous areas consisting of:

- 24 production bore drilling pads (totals 2.9 ha)
- 33 monitoring bore pads (totals 1.9 ha)
- 4 m wide access tracks at limited locations (totals 5 ha)

The location and land tenure subject to this NVCP application are detailed in Table 1.

Figure 2 details the discrete spatial locations of the production and monitoring bore pad sites and access tracks (totalling 9.8 ha) within the broader 9,830 ha paleochannel area.

2.3. Land Access and Tenure

The Kangan and Indee Station pastoral lessees support the KWS project and have granted access to the portion of the station for the purpose of constructing a borefield. The pastoral lessees support this NVCP application is provided in Appendix 1.

2.4. Proposed Clearing Method

The proposed clearing actions will involve mechanical vegetation clearing to facilitate the construction of production and monitoring bores and associated access tracks.

2.5. Associated Approvals

The proposed NVCP application is required to fulfil the KWS H3 assessment obligations associated with the aquifer pump testing and hydrological modelling. The H3 assessment underpins the KWS 5C licence assessment and approval in accordance with the RiWI Act.

3. Existing Environment

3.1. Climate

The Chichester and Roebourne subregion's climate is classified as arid (semi-desert) tropical, with rainfall primarily in summer. Average annual precipitation is 250–300 millimetres (mm) due to the influence of tropical cyclones that occur from November to April (BoM 2024).

3.2. Botanical and Ecological Surveys

The following botanical and fauna surveys were completed in accordance with the EPA guidelines (EPA, 2016 and EPA, 2020) within (and adjacent to) the proposed NVCP application area:

- The De Grey Hemi Gold Mine ecological surveys across the Indee Station:
    - Umwelt. (2023). Hemi Gold Deposit: Baseline Flora and Vegetation Assessment.
    - Western Wildlife. (2023). Hemi Gold Project: Detailed Vertebrate Fauna Survey 2021 - 2022.
    - Western Wildlife. (2024). Hemi Gold Project: Vertebrate Fauna Surveys 2021 - 2024.

The flora and vegetation survey area within Indee Station (Umwelt 2023) totalled approximately 29,518 ha.

The fauna survey area within Indee Station (Western Wildlife 2024) totalled approximately 34,687 ha.

- The KWS project ecological surveys across the Kangan Station:
    - Emerge Associates (2024) Technical Memorandum Detailed Flora and Vegetation Assessment Kangan Station Bore Field.
    - Ecological Matters (2024) Kangan Station and Northern Pipeline Terrestrial Vertebrate Fauna Assessment.

The flora and vegetation survey area within the northern portion of Kangan Station (Emerge 2024) totalled approximately 37.92 ha. This survey area is a sub-component of a larger detailed flora and vegetation survey undertaken for the KSW project across a 15,885 ha area.

The fauna survey area (Ecology Matters 2024) is approximately 1,360 ha.

Figure 3 illustrates the flora and vegetation survey boundaries completed within Kangan Station (Emerge 2024) and Indee Station (Umwelt 2023).

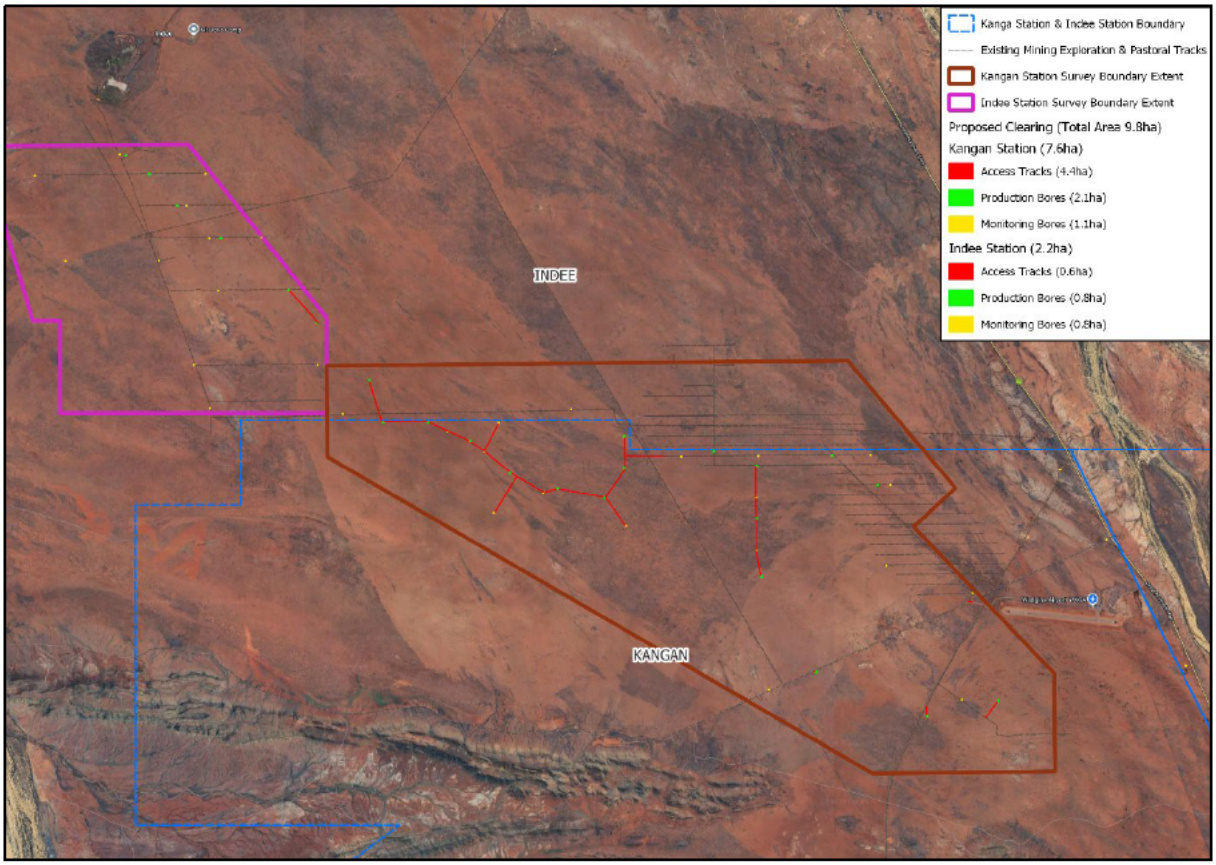


Figure 3 Flora and Vegetation Survey Boundaries within Kangan and Indee Station

3.2.1. Existing Environment Summary

The existing environment is summarised in Table 2.

Table 2: Existing Environment

<table>
<tr><th>Environmental Element</th><th>Assessment</th></tr>
<tr><td>Regional vegetation</td><td>The proposed BVCP application area is within the Pilbara Interim Biogeographic Regionalisation for Australia (IBRA) region, with the northern portion in the ‘PIL1’ or Chichester subregion (DEC 2002). The relevant regional Beard et al. (2013) vegetation associations include:
• Abydos Plain – Chichester 93: Hummock grassland with scattered shrubs or mallee Triodia spp., Acacia spp., Grevillea spp. and Eucalyptus spp.
Figure 4 illustrates the regional vegetation association.
<table>
<tr><th>Vegetation Association</th><th>IBRA subregion</th><th>Pre-European extent (ha)</th><th>Current Extent (ha)</th><th>% remaining</th><th>% Protected</th></tr>
<tr><td>Abydos Plain – Chichester 93</td><td>Chichester</td><td>2,476,378</td><td>2,473,007</td><td>99.86</td><td>0.54</td></tr>
</table></td></tr>
<tr><td>Vegetation Units</td><td>Kangan Station Survey (Emerge 2024)</td><td>Unit
AaAsTl</td><td>Description
Sparse to open shrubland of Acacia ancistrocarpa, Acacia inaequilatera and Grevillea wickhamii over low open shrubland of Acacia stellaticeps, Dampiera candicans and Ptilotus astrolasius over closed hummock grassland of Triodia lanigera (Emerge 2024).</td></tr>
<tr><td></td><td>Indee Station (Unwelt 2023)</td><td>Unit – 10</td><td>Tall open to sparse shrubland dominated by Acacia ancistrocarpa, Acacia inaequilatera, Acacia sericophylla, Acacia acradenia and occasionally Melaleuca lasiandra over low shrubland to sparse shrubland dominated by Acacia stellaticeps and occasionally Sida arenicola, Indigofera monophylla, Pluchea tetranthera and Corchorus parviflorus over low hummock grassland to open hummock grassland dominated by Triodia lanigera and/or Triodia schinzii on red or red-brown sandy loam on plains. (Umwelt 2023).</td></tr>
<tr><td>Vegetation Units – Total Areas</td><td>Kangan Station</td><td>AaAsTl</td><td>36.83 ha</td></tr>
<tr><td></td><td>Indee Station</td><td>Unit 10</td><td>17,317 ha</td></tr>
<tr><td></td><td></td><td>Total Area</td><td>17,353.83 ha</td></tr>
<tr><td>Vegetation Condition</td><td colspan="2">‘Excellent’ to ‘Very Good’</td></tr>
<tr><td>Threatened Ecological Communities</td><td colspan="2">• No threatened or priority ecological communities were recorded within the 9.8 ha NVCP application area.
• The Gregory Land System PEC is mapped as occurring approximately 1.6 km from the NVCP application area (Umwelt 2023). This PEC occurs where there are ‘linear dunes and restricted sandplains supporting shrubby hard spinifex (and occasionally soft spinifex) grasslands’ (DBCA 2023). The field survey confirmed that the NVCP application area supports extensive pindan sandplains with occasional rocky outcrops. Therefore, as the key features of the PEC are not present, it was not considered to occur.</td></tr>
</table>

Priority Flora	• The following priority flora species were recorded along the northern portion of Kangan Station:
	  o *Euploca mutica* (P3)
	  o *Triodia chichesterensis* (P3)
	• The vegetation and flora survey within the southern portion of Indee Station (or the vicinity of the NVCP application area) identified the presence of the following Priority Flora and under-described/surveyed species:
	  o *Euploca mutica* (P3)
	  o *Triodia chichesterensis* (P3)
	  o *Polymeria* sp. *nov.*(potentially undescribed).
	• The proposed NVCP application area avoids the surveys and mapped locations of the Priority flora species within Kangan and Indee Stations.
	• Significant populations of Priority Flora species *Euploca mutica* and *Triodia chichesterensis* are known to occur within the broader area (Emerge 2024).

Fauna Habitat	• The proposed NVCP application area is within the Spinifex Sandplain fauna habitat. • Spinifex Sandplain (consisting of 'Spinifex hummock grassland with mixed midstorey of various shrubs *Acacia stellaticeps*, Grevillea sp.' (Ecology Matters 2024)) was the dominant fauna habitat surveyed and mapped in the northern Kangan Station (Ecology Matters) and the De Grey Hemi Gold Mine proposal undertaken within the southern portion of Indee Station (Western Wildlife). • The mapped extent of the Spinifex Sandplain within the Indee and Kangan Stations totals 23,374 ha (22,162 ha within Indee Station and 1,212 ha in the northern portion of Kangan Station).

Significant Fauna	No fauna listed under the BC Act (or by the DBCA) or the EPBC Act would exclusively use or rely upon the 9.8 ha proposed clearing area. The likelihood of occurrence assessment by Ecology Matters (2024) undertaken across the northern portion of Kangan Station and Western Wildlife (2024) undertaken across the southern portion of Indee Station identified the following conservation-significant fauna species, with the potential to occur in the local region (i.e., within 50 km of the proposed NVCP application area) incorporating a range of habitat types:
	• **Pilbara Olive Python** (*Liasis olivaceus barroni*) – Vulnerable under the EBPC Act and Schedule 2 Division 3 under the BC Act: This subspecies is restricted to ranges within the Pilbara region and Mount Augustus in the Gascoyne and is often recorded near waterholes (Wilson & Swan, 2021). Usually associated with rocky substrates (A. A. Burbidge, 2004; Wilson & Swan, 2021).
	  o The proposed NVCP application area does not contain the preferred/core habitat for Pilbara Olive Python.
	  o This species is likely to be a regular visitor in the local area (i.e., within 5 km km of the NVCP application area), where suitable habitat exists, including drainage lines and rocky areas.
	• **Fork-tailed Swift** (*Apus pacificus*) - Migratory under the EPBC Act and Schedule 1 Division 2 under the BC Act: The swift is a largely aerial species of unpredictable occurrence in Western Australia. Scattered records from the south coast, widespread in coastal and subcoastal areas between Augusta and Carnarvon, scattered along the coast from south-west Pilbara to the north and east Kimberley region. Twelve DBCA database records exist between 2-40 km of the proposed NVCP application area.
	  o Individuals may fly over the proposed NVCP application area and potentially forage in the airspace above the proposed NVCP application area.
	• **Grey Falcon** (*Falco hypoleucos*) - Vulnerable under the EPBC Act and Schedule 2 Division 3 under the BC Act: Sparsely distributed through central, northern and north-western Australia, this species appears to have a distribution that is centred around wooded ephemeral or permanent drainage lines (Shoenjahn, 2013). There are 15 DBCA database records within 40 km of the NVCP application area.
	  o The species is expected to visit habitats near the NVCP application area, particularly those associated with drainage lines, providing suitable foraging habitats. Some large trees associated with

	drainage lines within 10 km of the NVCP application area may also provide suitable sites for nesting. • **Northern Quoll** (*Dasyurus hallucatus*) - Endangered under the EBPC Act and Schedule 2 Division 2 under the BC Act: Often associated with rocky areas in the Pilbara (but also occurs along watercourses and beaches), and occurs through forests, savannahs and dissected rocky environments in the Kimberley (Van Dyck and Strahan 2008; DAWE 2020d). It also occurs patchily, across northern Australia to Queensland (Van Dyck and Strahan 2008; DAWE 2020d). This species formerly occurred across much of northern Australia, from the Pilbara to south-east Queensland, but now only occurs in a number of fragmented populations across its former range, largely due to poisoning by Cane Toads. o There are more than 1,600 DBCA database records within 40 km of the proposed NVCP application area. o There is likely suitable habitat (potentially supporting a population of Northern Quolls) within the rocky ridge. This habitat area is approximately 1.4 km south of the nearest proposed monitoring bore clearing area. o Northern Quoll(s) were detected on motion-sensitive cameras in the northern portion of the Kangan Station. o It is expected that the rocky ridge (located 2 km – 3 km south of the proposed NVCP application area) will be occupied by a Northern Quoll population. The Northern Quoll may transition across the 'Spinifex Sandplains' habitat area. • **Greater Bilby** (*Macrotis lagotis*) - Vulnerable under the EBPC Act and Schedule 3 under the BC Act: Found in a wide range of arid environments and formerly occurred as far south as the WA Wheatbelt; now restricted to central to north-western Australia, including the northern Pilbara. There are 123 DBCA database records within 40 km of the NVCP application area. o This species favours sandy to sandy loam plains such as Spinifex sandplain. o The Bilby was observed during the fauna survey; however, it is likely to forage and burrow within the Spinifex Sandplain habitat within the local region. • **Pilbara Leaf-nosed Bat** (*Rhinonicteris aurantia* (Pilbara)) - Vulnerable under the EBPC Act and Schedule 2 Division 3 under the BC Act: The Pilbara Leaf-nosed Bat occurs within the Pilbara where it is limited by the availability of very hot (28-32 °C) and very humid (96-100%) roost sites in caves and/or abandoned mine voids (Armstrong, 2001; Van Dyck & Strahan, 2008). There are 211 DBCA database records within 40 km of the NVCP application area. o The species preferred suitable foraging habitat is drainage lines. o There are no caves present in the NVCP application area. o Potential roosting habitat may be available within the rocky ridge/outcrop area. This habitat area is approximately 1.4 km south of the nearest proposed monitoring bore clearing area. o The species may forage across all vegetated areas near this ridgeline, including the 'Spinifex Sandplain' habitat. • **Ghost Bat** (*Macroderma gigas*) - Vulnerable under the EBPC Act and Schedule 2 Division 3 under the BC Act: The species' current range is discontinuous, with distinct colonies in the Pilbara and the Kimberley (including several islands) of Western Australia, as well as in other locations across the north of Australia (TSSC, 2016a). Colonies are geographically isolated and genetically distinct. There are 141 DBCA database records within 40 km of the NVCP application area. Several known roosting caves are within 15 km of the NVCP application area. o The proposed NVCP application area likely provides a foraging habitat for this species. Potential roosting habitat may be available within the rocky ridge/outcrop area. This habitat area is approximately 1.4 km south of the nearest proposed monitoring bore clearing area. o A known roost site is 15 km south of the NVCP application area. o It is expected to be a regular visitor across all vegetated areas, particularly those near the southern ridgeline. o No records of the species were made during the fauna survey.

	• **Brush-tailed Mulgara** (*Dasycercus blythi*) - Priority 4 by DBCA: Pilbara and inland, central Western Australia, and central Australia (southern Northern Territory and northern South Australia). This species is often compared with its congener, the Crest-tailed Mulgara (*D. cristicauda*), as the two are sympatric over parts of their range (Van Dyck & Strahan, 2008). In general, the Brush-tailed Mulgara is less closely associated with the dune fields than the Crest-tailed Mulgara (Woolley et al., 2013). Where the two co-occur, the Crest-tailed Mulgara is restricted to sand ridges with an understorey dominated by spinifex (*Triodia* sp). In contrast, the Brush-tailed Mulgara occupies sandplain and gibber plain (Pavey et al., 2011). 320 DBCA database records are within 40 km of the NVCP application area. o This species was captured on a motion-sensitive camera during the fauna survey, and the Spinifex Sandplain provides a known and suitable habitat for burrows and foraging. • **Long-tailed Dunnart** (*Antechinomys (Sminthopsis) longicaudata*) - Priority 4 by DBCA: The Long-tailed Dunnart generally occurs in rocky outcrops in the arid and semi-arid western interior (Van Dyck & Strahan, 2008). The southern part of the NVCP application area is close to the northern extent of the range of this species. o The proposed NVCP application area does not contain suitable rocky habitat, so this species is not expected to be present. However, it may be present in the local area, within rocky habitats. The closest rocky ridge/outcrop habitat area is approximately 1.4 km south of the proposed monitoring bore clearing area. • **Short-tailed Mouse** (*Leggadina lakedownensis*) - Listed as Priority 4 by DBCA: Northern Pilbara through the Kimberley and into northern Australia (Van Dyck & Strahan, 2008), inhabiting a range of environments including spinifex and tussock grasslands, samphire and sedgelands, Acacia shrublands, tropical Eucalyptus and Melaleuca woodlands, and stony ranges (Van Dyck & Strahan, 2008). Usually associated with areas that are seasonally inundated on red or white sandy-clay soils (Van Dyck & Strahan, 2008). o This species can occur across various habitats, including 'Spinifex Sandplains', where the proposed NVCP application occurs. This species is expected to occur in the local region when conditions are suitable in the local area. • **Ngadji or Western Pebble-mound Mouse** (*Pseudomys chapmani*) - Priority 4 by DBCA: The Western Pebble-mound Mouse lives in groups in burrows surrounded by pebbles. Mounds are typically found on low, gravelly, and stony rises. 260 DBCA database records are within 40 km of the proposed NVCP application area. o No suitable habitat or mounds were found within the proposed NVCP application area, although suitable habitats (gravel rises) were recorded nearby (i.e., within 2 km from the closest clearing area). This species is expected to reside in gravel areas within 10 km of the proposed NVCP application area.
	In summary: • The Spinifex Sandplain totalling 23,374 ha, was the most extensive fauna habitat within the northern portion of Kangan Station and the southern portion of Indee Station. The following priority fauna species potentially use this habitat: o Fork-tailed Swift (Migratory under the EPBC Act and Division 2 under the BC Act) o Grey Falcon (Vulnerable under the EPBC Act and Division 3 under the BC Act) o Peregrine Falcon (Division 3 under the BC Act) o Greater Bilby (Vulnerable under the EBPC Act and Schedule 3 under the BC Act) o Brush-tailed Mulgara (BC Act - Priority 4) o Short-tailed Mouse (BC Act - Priority 4) o Pilbara Leaf-nosed Bat (Vulnerable under the EBPC Act and Division 3 under the BC Act) o Ghost Bat (Vulnerable under the EBPC Act and Division 3 under the BC Act)

	○ Pilbara Grasswren. • The proposed NVCP application area will result in an insignificant loss (i.e., less than 0.05%) of 'Spinifex Sandplain' habitat (up to 9.8 ha) locally or regionally. • The proposed NVCP application area avoids disturbance in areas where the Greater Bilby was recorded or surveyed.
Significant Ecological Linkage	• The proposed NVCP application area is not part of a significant ecological linkage.
Wetlands and/or waterways	• No Rights in Water and Irrigation Act 1914 (RIWI Act) Rivers overlap the proposed NVCP application area. • No wetland features, permanent or semi-permanent watercourses, or wetlands overlap the NVCP application area, and the works are proposed to have no impacts on waterways.
Water resources	• The proposed NVCP application area does not overlap a mapped Public Drinking Water Source Area (PDWSA), and the proposed clearing works are not anticipated to impact PDWSAs. • The closest PDWSA is Yule River Water Reserve (a Priority 1 drinking water source), located approximately 6 km west/northwest of the closest bore subject to this NVCP.
Conservation Reserves	• The proposed NVCP application area does not overlap any conservation reserves, and none occur within 40 km of it. • The proposed NVCP application is not anticipated to impact conservation areas.
Environmentally Sensitive Areas (ESAs)	• No mapped ESA is located approximately 50 km south-west of the NVCP application area, the Mungaroo Range Nature Reserve.
Land and soil quality	• The proposed NVCP application area is within the Uaroo Land System, which is described as 'broad sandy plains, pebbly plains and drainage tracts supporting hard and soft spinifex hummock grasslands with scattered acacia shrubs' (DPIRD 2022). • The major soils associated with the Uaroo Land System include red sandy earths, red deep sands and red loamy earths (DPIRD 2022). • The proposed clearing area is not within an area at risk of Acid Sulfate Soils and does not intersect any contaminated sites.
Heritage	• No National Heritage Areas/World Heritage Areas or mapped Indigenous heritage areas overlap the proposed NVCP application area. • No known Aboriginal heritage sites are within the proposed NVCP application area. The proposed NVCP application area has been subject to a heritage site assessment by the KAC. • The NVCP application area are not expected to impact any heritage sites.
Amenity	No sensitive receptors are directly adjacent to the proposed NVCP application area.

3.2.2. Supporting Information

The regional and local existing environment is supported by the following spatial information:

- Appendix C: Surveyed Vegetation Types (Umwelt 2023 & Emerge 2024)
- Appendix D: Mapped Vegetation Condition (Umwelt 2023 & Emerge 2024)
- Appendix E: Mapped Gregory Land System
- Appendix F: Mapped Priority Flora (Umwelt 2023 & Emerge 2024)
- Appendix G: Mapped Fauna Habitat (Western Wildlife 2023 & Ecology Matters 2024)
- Appendix H: Mapped Regional Hydrological Values and Conservation Reserves
- Appendix I: Mapped Heritage Sites

3.3. Environmental Management

3.3.1. Avoidance

The impacts on native vegetation were avoided and minimised through the following actions:

- Locate the production and monitor bores within cleared areas to reduce the clearing footprint associated with bore infrastructure.
- Utilising the existing pastoral and mining exploration access tracks wherever possible.

3.3.2. Mitigation and Management

Key management measures for the proposed clearing activities include:

- No clearing is permitted outside the approved NVCP area.
- Clearing will be minimised by placing the bore assets and access tracks in existing cleared locations.
- Works will be undertaken systematically to minimise re-run and compaction of access tracks.
- The clearing locations are to be demarcated with flagging tape, GPS or similar before clearing activities are commenced.
- An environmental Specialist or Site Supervisor must check clearing areas before clearing to ensure no more than 9.8 ha of clearing is undertaken.
- A pre-clearing environmental toolbox will be held so all staff know their responsibilities under the approved clearing permit.
- Native vegetation will be cleared slowly and progressively in one direction, allowing fauna to move away from the clearing area.
- Vehicles and machinery will be moved in convoy along access tracks/ routes and will not enter adjacent vegetation.
- Representative(s) from the KAC will be present for the duration of the clearing and bore construction program.
- A CEMP will be prepared and implemented. This plan will include measures to manage Greater Bilby's dust, erosion, and weed spread during the clearing of native vegetation.

3.4. Stakeholder Engagement

The KWS project has been subject to a comprehensive stakeholder engagement program. Table 3 summarises the stakeholder engagement briefings.

Table 3: Stakeholder Engagement Register.

Stakeholder	Briefing Details
Minister for Water	Date: 02/07/2024 Meeting Overview: Project Overview & 5C Licence Application
Indee Station	Date: 31/10/2023 Meeting Overview: Support for 5C Licence Application Date 24/09/24 Meeting Overview: Project progress and next steps Date: 10/12/24 Meeting Overview: Native Vegetation Clearing Permit
Kangan Station	Date: 31/10/2023 Meeting Overview: Support for 5C Licence Application Date 24/09/24 Meeting Overview: Project progress and next steps Date: 12/12/2024 Meeting Overview: Native Title Clearing Permit
De Grey Mining	Date: 30/07/2024

	Meeting Overview: Water Management Kariyarra Paleochannel
JTSI*	Date: 14/11/2024 Meeting Overview: State Government Support for KWS
DevelopmentWA	Date: 25/07/2024 Meeting Overview: Boodarie SIA Water Supply
DPLH	Date: 12/11/2024 Meeting Overview: Project Overview and Land Tenure
DEMIRS	Date: 20/12/2024 Meeting Overview: Project Overview and Land Tenure
Water Corporation	Date: 25/07/2024 Meeting Overview: Boodarie SIA Water Supply
POSCO*	Date: 19/11/2024 Meeting Overview: Support for water supply to BSIA and POSCO's PHS project
BP*	Date: 25/11/2024 Meeting Overview: Support for water supply to BSIA and bp's AREH

*Regular meetings held only most recent meeting shown.

4. KWS NVCP Application Assessment

4.1. Assessment Against Clearing Principles

Table 8 assesses the 10 Clearing Principles (outlined in Schedule 5 of the EP Act) to support the KWS NVCP application based on the conclusions from the multiple baseline surveys. The assessment concludes that the proposed clearing activity within the 9.8 ha application area is unlikely to be at variance to the 10 Clearing Principles.

Table 4: Assessment Against the 10 Clearing Principles

Principle	Assessment	Outcome

(a) Native vegetation should not be cleared if it comprises a high level of biological diversity.	The NVCP application proposes to clear up 9.8 ha of native vegetation.
	Vegetation
	• The proposed NVCP application area is in the Abydos Plain—Chichester 93 vegetation association. This association preserves over 99% of the pre-European extent in the region.
	• The vegetation units within the NVCP application area (Umweld 2023)) align with the below description:
	  ○ **AaAsTl:** Sparse to open shrubland of *Acacia ancistrocarpa*, *Acacia inaequilatera* and *Grevillea wickhamii* over low open shrubland of *Acacia stellaticeps*, *Dampiera candicans* and *Ptilotus astrolasius* over closed hummock grassland of *Triodia lanigera* (Emerge 2024).
	  ○ **VT 10:** Tall open to sparse shrubland dominated by Acacia ancistrocarpa, *Acacia inaequilatera*, *Acacia sericophylla*, *Acacia acradenia* and occasionally *Melaleuca lasiandra* over low shrubland to sparse shrubland dominated by *Acacia stellaticeps* and occasionally *Sida arenicola*, *Indigofera monophylla*, *Pluchea tetranthera* and *Corchorus parviflorus* over low hummock grassland to open hummock grassland dominated by *Triodia lanigera* and/or *Triodia schinzii* on red or red-brown sandy loam on plains (Umwelt 2023).
	• These vegetation units (AaAsTl (Emerge 2024) and VT 10 (Umwelt 2023)) were the dominant community in the northern portion of Kangan Station and across the southern portion of Indee Station. These vegetation units within the NVCP application area total 17,377.83 ha.
	• The proposed NVCP application area is not considered likely to impact the values of the vegetation communities. The proposed clearing of 9.8 ha represents less than 0.0% of the surveyed vegetation units (AaAsT and Unit 10).
	• The native vegetation (defined in the vegetation unit mapping) within the NVCP application area is not considered to have higher biodiversity and conservation value than the surrounding vegetation within the local area.
	• The native vegetation within the NVCP application area is not considered to have a higher genetic diversity than the remaining native vegetation of that ecological community, as the vegetation is contiguous with adjacent native vegetation and has no special features.
	• No TECs listed under the EPBC Act, BC Act, or PECs listed by DBCA in the proposed NVCP application area were identified.
	• A CEMP will be prepared and implemented. This plan will include measures to manage Greater Bilby's dust, erosion, and weed spread during the clearing of native vegetation.
	Flora
	• No Priority flora species were recorded in the NVCP application area.
	• The location of the mapped Priority Flora species to the proposed NVCP application area within Indee and Kangan Station are:
	  ○ *Euploca mutica* (P3) – the closest population to the nearest clearing monitoring/production bore pads is 20 m.
	  ○ *Triodia chichesterensis* (P3) – the closest population to the nearest clearing monitoring/production bore pads is 350 m.
		Unlikely to be at variance.

	○ *Polymeria* sp. *nov.* (potentially undescribed) – the closest population to the nearest clearing monitoring/production bore pads is 550 m. • The 37.92 ha Kangan Station vegetation and flora survey identified: ○ Thirty-eight (38) flora species representing 13 families and 21 genera (Emerge 2024). • The 29,518 ha Indee Station vegetation and flora survey identified: ○ 336 flora taxa representing 53 families and 145 genera (Umwelt 2023). **Fauna and fauna habitat** • One fauna habitat type was recorded in the proposed NVCP application area: Spinifex Sandplain. • No significant fauna species were recorded during the survey. • The widespread Spinifex Sandplain is considered a key habitat for Greater Bilby. This NVCP application has avoided disturbance in areas where Greater Bilby was previously recorded/surveyed. This regionally widespread habitat type represents 23,374 ha surveyed and mapped within the northern portion of Kangan Station and the southern portion of Indee Station. • The proposed NVCP application area will result in an insignificant loss (i.e., less than 0.05%) of Spinifex Sandplain habitat (up to 9.8 ha) locally or regionally. The 9.8 ha NVCP application area (largely non-contiguous) is not considered likely to result in habitat fragmentation and displacement of any fauna individuals, particularly the Greater Bilby. • Fauna habitat(s) similar to the Spinifex Sandplain habitat (within the proposed NVCP application area) are located outside the proposed application area. Other areas of similar fauna habitat/vegetation type adjacent to (or within 10 km of the NVCP application area) are expected to have a similar biological diversity and conservation value to the NVCP application area. • A CEMP will be prepared and implemented. This plan will include measures to manage Greater Bilby's dust, erosion, and weed spread during the clearing of native vegetation.	
(b) Native vegetation should not be cleared if it comprises the whole or part of, or is necessary for the maintenance of, a significant habitat for fauna Indigenous Western Australia.	• The Spinifex Sandplain, totalling 23,374 ha, was the most extensive fauna habitat within the northern portion of Kangan Station and the southern portion of Indee Station. The following conservation-significant or priority fauna species that may potentially use this habitat include: ○ Fork-tailed Swift (Migratory under the EPBC Act and Division 2 under the BC Act) ○ Grey Falcon (Vulnerable under the EPBC Act and Division 3 under the BC Act) ○ Peregrine Falcon (Division 3 under the BC Act) ○ Greater Bilby (Vulnerable under the EBPC Act and Schedule 3 under the BC Act) ○ Brush-tailed Mulgara (BC Act - Priority 4) ○ Short-tailed Mouse (BC Act - Priority 4) ○ Ghost Bat (Vulnerable under the EBPC Act and Division 3 under the BC Act) ○ Pilbara Grasswren • The proposed clearing activities are unlikely to have a significant impact on these species for the following reasons: ○ These fauna species are wide-ranging and found throughout the broader region. These species are only likely transient visitors within the NVCP application area. ○ They do not exclusively depend on any habitat type or feature within the NVCP application area.	Unlikely to be at variance.

	○ The Spinifex Sandplain habitat is well represented outside the NVCP application area. The proposed NVCP application area will result in an insignificant loss (i.e., less than 0.05%) of Spinifex Sandplain habitat (up to 9.8 ha) locally or regionally. ○ The proposed NVCP application area avoids disturbance in areas where the Greater Bilby was recorded or surveyed. ○ The 9.8 ha NVCP application area (largely non-contiguous) is not considered likely to result in habitat fragmentation and displacement of any fauna individuals, particularly the Greater Bilby. ○ The clearing of native vegetation is not considered to alter ecological functions and processes that protect significant habitats for fauna. ○ The proposed NVCP application area is not considered to contain significant habitat for faunal assemblages that are not present in neighbouring areas.	
(c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.	• No species listed under the EPBC Act or gazetted as Threatened under the BC Act were recorded in the Amendment Application Area. Three species listed as Priority Flora by the DBCA have been recorded in the NVCP application area. • No Threatened flora species were recorded in the proposed NVCP application area. • No species listed under the EPBC Act or other significant flora species were recorded in the proposed NVCP application area.	
(d) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a threatened ecological community.	• None of the vegetation associations or landforms identified within the proposed NVCP application area are associated with TECs or PECs (Emerge 2024 and Umwelt 2023). The closest PEC is the Gregory Land System, located 1.6 km northwest of the NVCP application area. • No EPBC Act TECs are present in the proposed NVCP application area. • The proposed works will impact no EPBC Act TECs or associated native vegetation. • No significant ecological communities are known or likely to occur within the NVCP application area.	Unlikely to be at variance.
(e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.	• The habitat and vegetation within the proposed NVCP application area are well represented in the local region, and therefore, it is unlikely that individual species would be restricted to a particular habitat and vegetation occurring in the NVCP application area. • Clearing native vegetation within the proposed NVCP application area will not reduce the extent of native vegetation below 30% in the bioregion or subregion. • Clearing native vegetation within the proposed NVCP application area will not significantly reduce the ecological community's known extent from pre-European levels. The current remaining extents of the vegetation communities in the bioregion are almost 100% of pre-European extents. • Clearing native vegetation within the proposed NVCP application area will not significantly reduce the known extent of the vegetation community in the bioregion. • Clearing native vegetation within the proposed NVCP application area will not significantly reduce the known extent of the vegetation community in the local area.	Unlikely to be at variance.
(f) Native vegetation should not be cleared if it is growing in or in	• No permanent watercourses, wetlands or drainage lines are located within the NVCP application area. • The closest rivers (Yule River and Turner River) are approximately 10 km from the proposed NVCP application area.	Unlikely to be at variance.

	association with a watercourse or wetland.	• The closest PDWSA is Yule River Water Reserve (a Priority 1 drinking water source), located approximately 6 km west/northwest of the closest bore subject to this NVCP. • No major drainage lines are within 1 km of the proposed NVCP application area.	
(g)	Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation	• Land degradation may include localised impacts such as erosion, changes to pH, water logging, salinisation or spread of weeds. • Removing native vegetation at a small scale (at discrete locations and mostly non-contiguous) is not anticipated to increase wind or water erosion in the NVCP application area or adjacent areas. • A review of ASS risk mapping indicates the proposed NVCP application area has a low risk of ASS occurrence. The NVCP application area does not intersect any contaminated sites. No known contaminated sites are recorded within 20 km of the NVCP application area. • The NVCP application area contains soil that is not susceptible to erosion. Hydrological regimes are expected to be maintained through design, and standard management practices will be implemented to prevent erosion/sedimentation. Additionally, the NVCP application area is in an area that has previously been disturbed via pastoral and mining exploration access tracks. • Given the small area to be cleared, it is not likely that the clearing will cause appreciable land degradation that will affect the present or future use of the land. Based on the above, the proposed clearing of native vegetation for the proposed NVCP application area is not considered to be at variance with this principle. • A CEMP will be prepared and implemented. This plan will include measures to manage Greater Bilby's dust, erosion, and weed spread during the clearing of native vegetation.	Unlikely to be at variance.
(h)	Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.	• No conservation areas overlap the proposed NVCP application area or are within 40 km of it. • No impacts on conservation areas are anticipated with the proposed clearing activities. • The vegetation of the proposed NVCP application area does not contribute to the environmental values of a conservation area. The proposed clearing of native vegetation within the NVCP application area is not anticipated to have any off-site impacts. • Management measures regarding weeds and disease will be implemented to ensure that weeds are not spread as a result of clearing activities. The proposed clearing is not expected to impact any adjacent conservation areas.	Unlikely to be at variance.
(i)	Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.	• No RIWI Act Rivers overlap the proposed NVCP application area. • No wetland features, permanent or semi-permanent watercourses, or wetlands overlap the proposed NVCP application area. • The proposed NVCP application area does not overlap a mapped PDWSA. The closest PDWSA is Yule River Water Reserve (a Priority 1 drinking water source), located approximately 6 km west/northwest of the closest bore subject to this NVCP. • The proposed NVCP application's small-scale 9.8 ha clearing activities are not anticipated to impact PDWSAs. • Clearing within the proposed NVCP application area is unlikely to cause deterioration in the quality of surface or underground water; therefore, the proposal is unlikely to be at variance to this principle.	Unlikely to be at variance.

(j) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate the intensity of flooding.	• Massive surface water runoff and localised flooding occur following intense rainfall events from December to April. However, the proposed vegetation clearing is not likely to significantly influence the incidence or intensity of flooding. It is highly improbable that surface runoff from the cleared area could create sufficient concentrated water volumes to cause a localised flood event. • The scale of the KWS NVCP application area is not likely to impact the flood regimes or increase the intensity of flooding in the region. • There is expected to be no alteration to the local or regional hydrological regimes; therefore, flooding is unlikely. Additionally, given the abundance of vegetation within the surrounding region, with over 99% pre-European vegetation remaining, the proposed clearing is not expected to increase the risk of flooding. • The clearing of native vegetation is not considered likely to cause any alteration to peak flood height. • Management measures will be in place for the proposed clearing operation to mitigate and manage erosion and associated environmental aspects. • The proposed clearing of native vegetation for the Project is not considered to be at variance with this principle.	Unlikely to be at variance.

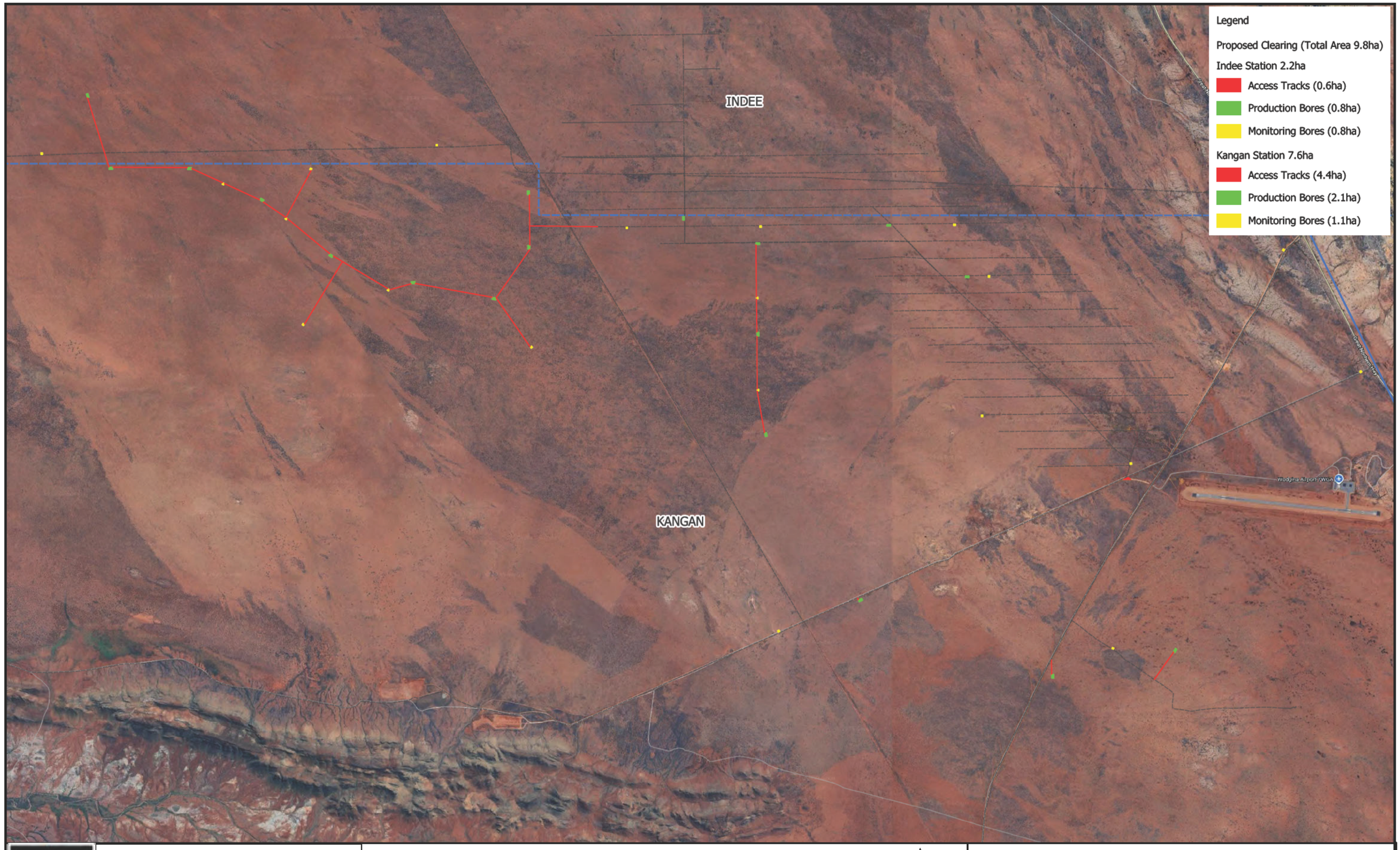
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Appendix A: Detailed NVCP Application Area Mapping

Indee Station and Kangan Station



Project code:
Drawn by: DHH
Date: 23/01/2025
Scale: 1:43627
Page size: A4
Sources:Google,DataWA

0 2 4 km

WGS 84 /
Pseudo-Mercator

Kariyarra Water Scheme

Appendix A - NVCP Application Area Map

Legend

Proposed Clearing (Total Area 9.8ha)

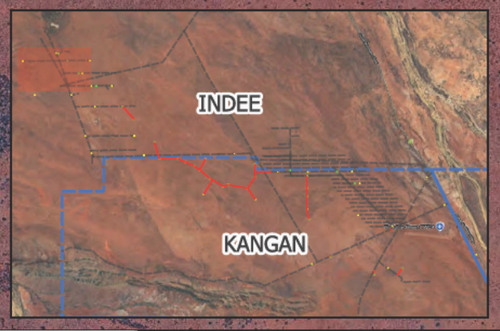
Indee Station 2.2ha

- Access Tracks (0.6ha)
- Production Bores (0.8ha)
- Monitoring Bores (0.8ha)

Kangan Station 7.6ha

- Access Tracks (4.4ha)
- Production Bores (2.1ha)
- Monitoring Bores (1.1ha)

INDEE



Project code:
Drawn by: DHH
Date: 23/01/2025
Scale: 1:10000
Page size: A4
Sources:Google,DataWA

0 0.6 1.2 km

WGS 84 /
Pseudo-Mercator

Kariyarra Water Scheme

Appendix A - NVCP Application Area Map

Legend

Proposed Clearing (Total Area 9.8ha)

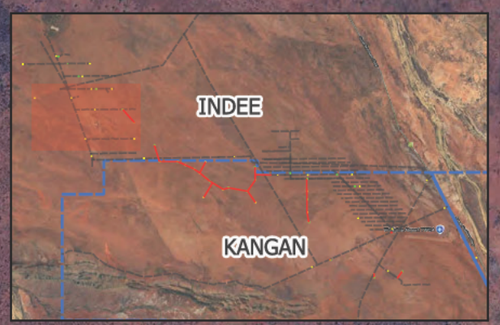
Indee Station 2.2ha

- Access Tracks (0.6ha)
- Production Bores (0.8ha)
- Monitoring Bores (0.8ha)

Kangan Station 7.6ha

- Access Tracks (4.4ha)
- Production Bores (2.1ha)
- Monitoring Bores (1.1ha)

INDEE



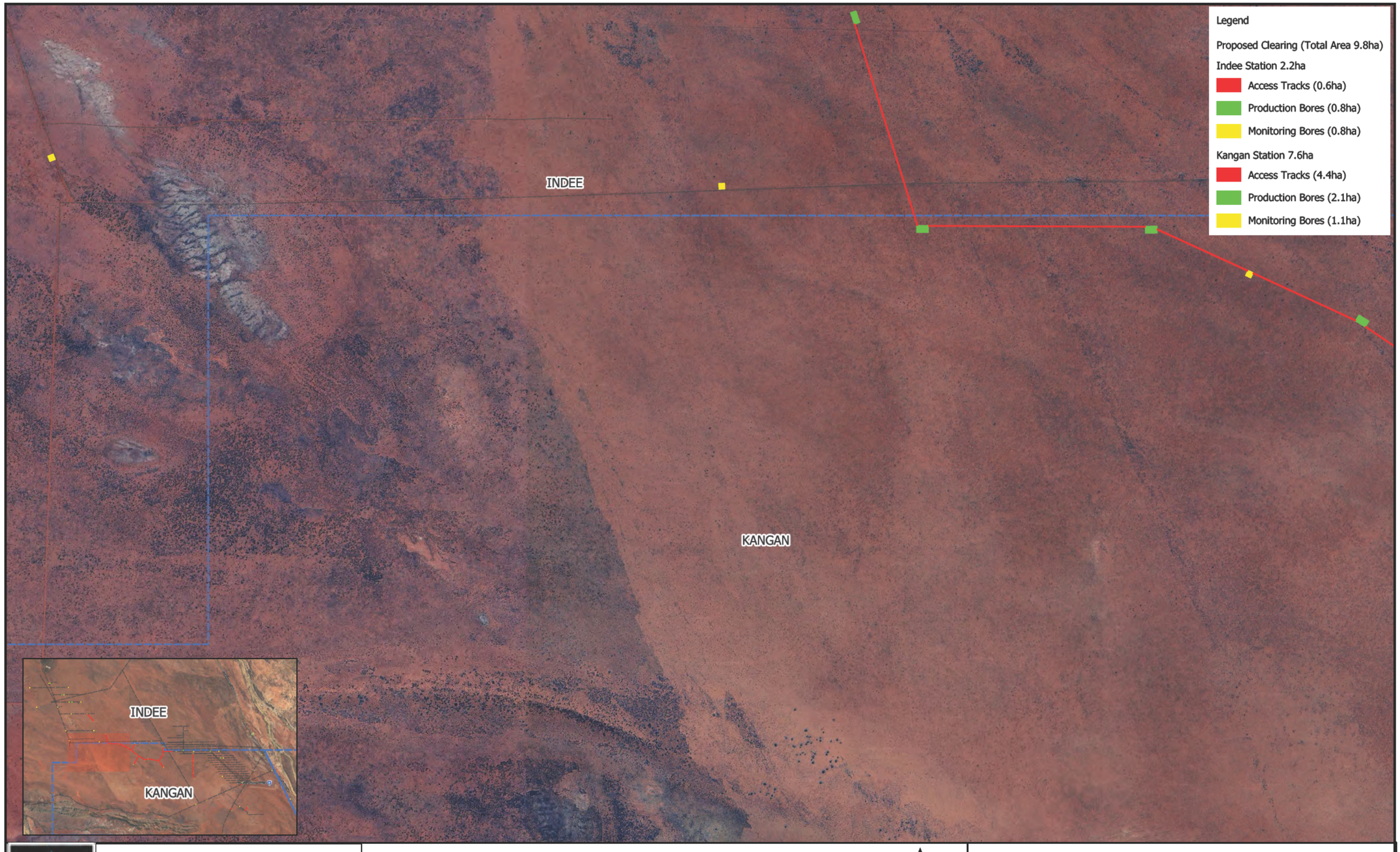
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Drawn by: DHH
Date: 23/01/2025
Scale: 1:15000
Page size: A4
Sources:Google,DataWA

0 0.9 1.8 km

WGS 84 /
Pseudo-Mercator

Kariyarra Water Scheme

Appendix A - NVCP Application Area Map



Project code:
Drawn by: DHH
Date: 23/01/2025
Scale: 1:15000
Page size: A4
Sources:Google,DataWA

0 0.9 1.8 km

WGS 84 /
Pseudo-Mercator

Kariyarra Water Scheme

Appendix A - NVCP Application Area Map



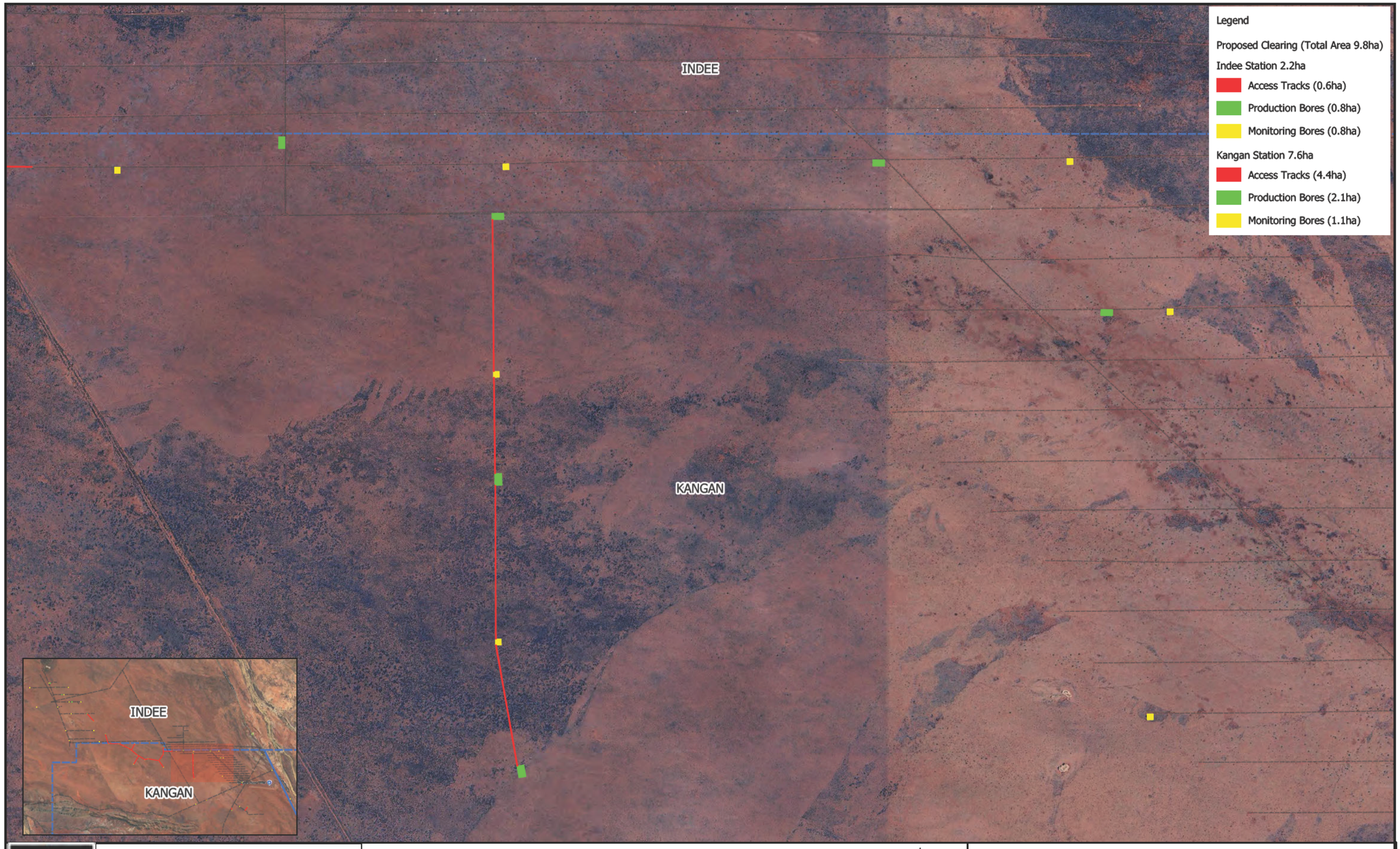
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Date: 23/01/2025
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Sources:Google,DataWA

0 0.9 1.8 km

WGS 84 /
Pseudo-Mercator

Kariyarra Water Scheme

Appendix A - NVCP Application Area Map



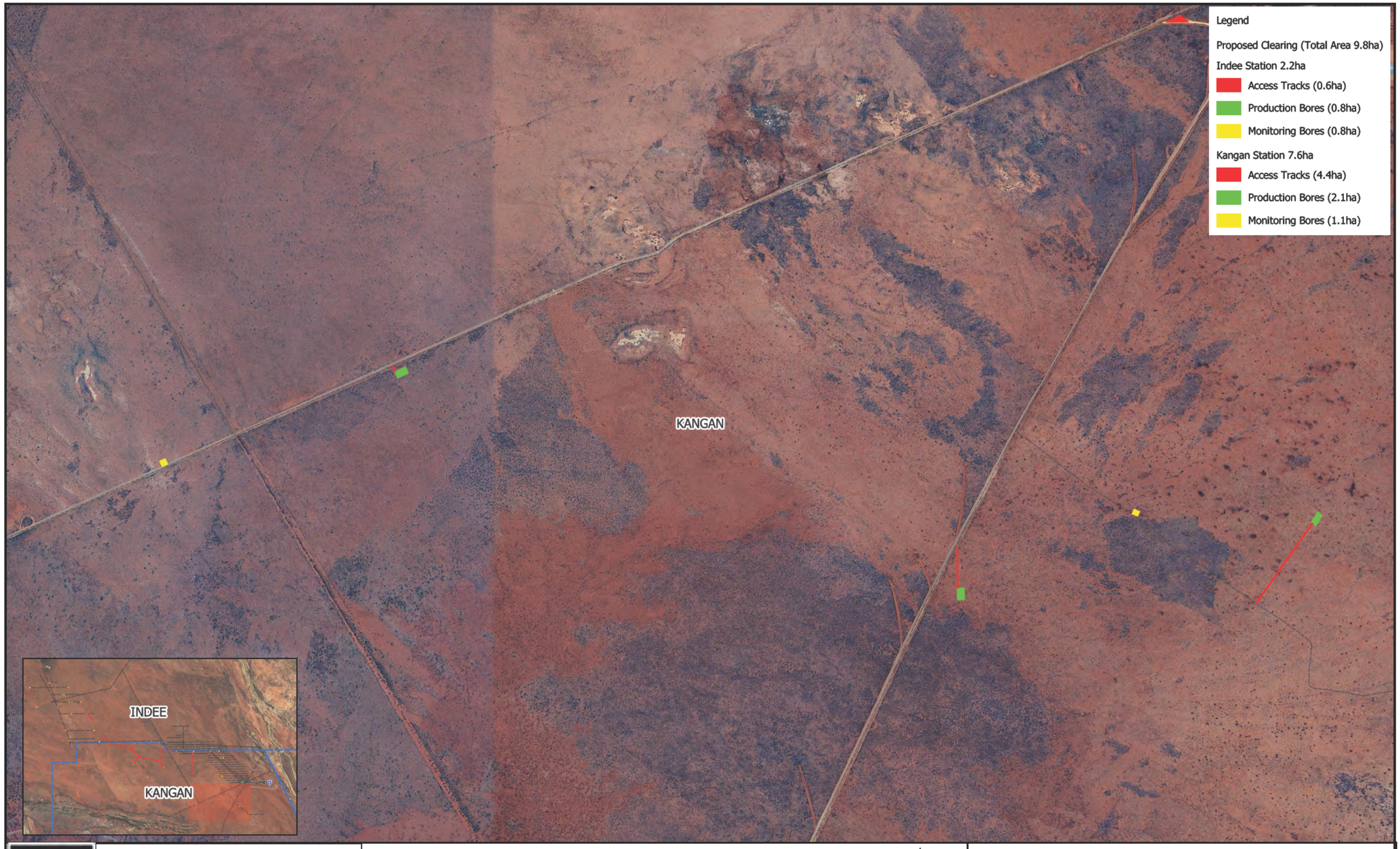
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Drawn by: DHH
Date: 23/01/2025
Scale: 1:15000
Page size: A4
Sources:Google,DataWA

0 0.9 1.8 km

WGS 84 /
Pseudo-Mercator

Kariyarra Water Scheme

Appendix A - NVCP Application Area Map



Project code:
Drawn by: DHH
Date: 23/01/2025
Scale: 1:15000
Page size: A4
Sources:Google,DataWA

0 0.9 1.8 km

WGS 84 /
Pseudo-Mercator

Kariyarra Water Scheme

Appendix A - NVCP Application Area Map

Legend

Proposed Clearing (Total Area 9.8ha)

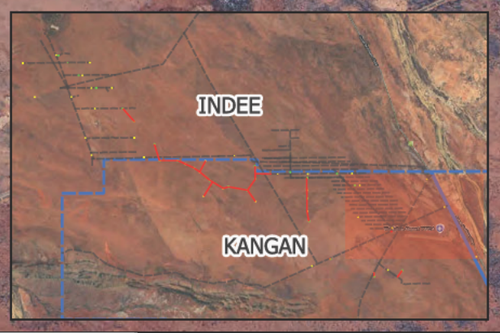
Indee Station 2.2ha

- Access Tracks (0.6ha)
- Production Bores (0.8ha)
- Monitoring Bores (0.8ha)

Kangan Station 7.6ha

- Access Tracks (4.4ha)
- Production Bores (2.1ha)
- Monitoring Bores (1.1ha)

KANGAN



Project code:
Drawn by: DHH
Date: 23/01/2025
Scale: 1:19000
Page size: A4
Sources:Google,DataWA

0 1 2 km

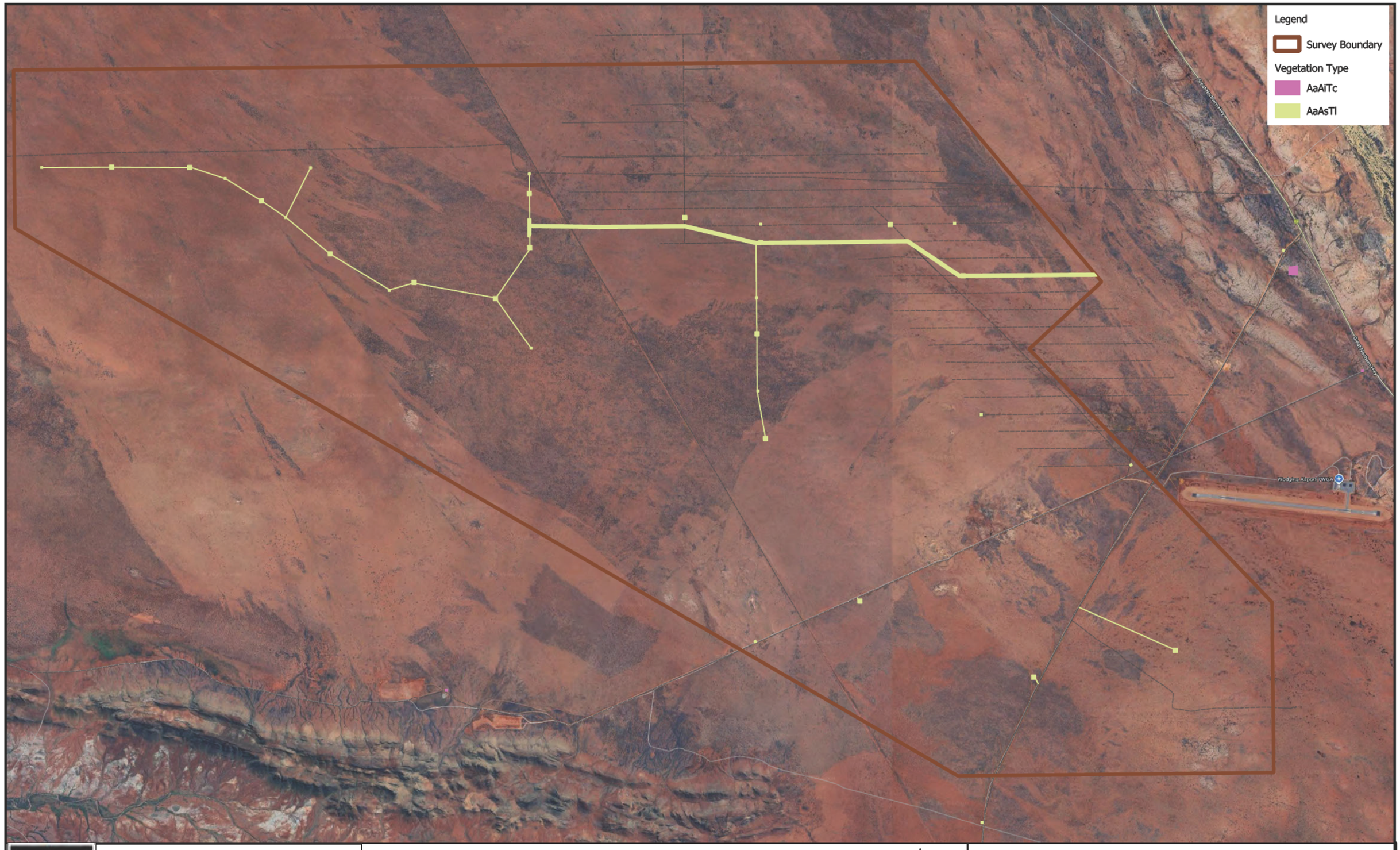
WGS 84 /
Pseudo-Mercator

Kariyarra Water Scheme

Appendix A - NVCP Application Area Map

Appendix C: Vegetation Types

Indee Station and Kangan Station



Project code:
Drawn by: DHH
Date: 20/01/2025
Scale: 1:43627
Page size: A4
Sources:Google,DataWA

0 2 4 km

WGS 84 /
Pseudo-Mercator

Kariyarra Water Scheme

Appendix C - Emerge Associates Vegetation Type



Project code:
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Date: 17/01/2025
Scale: 1:32877
Page size: A4
Sources:Google,DataWA

0 2 4 km

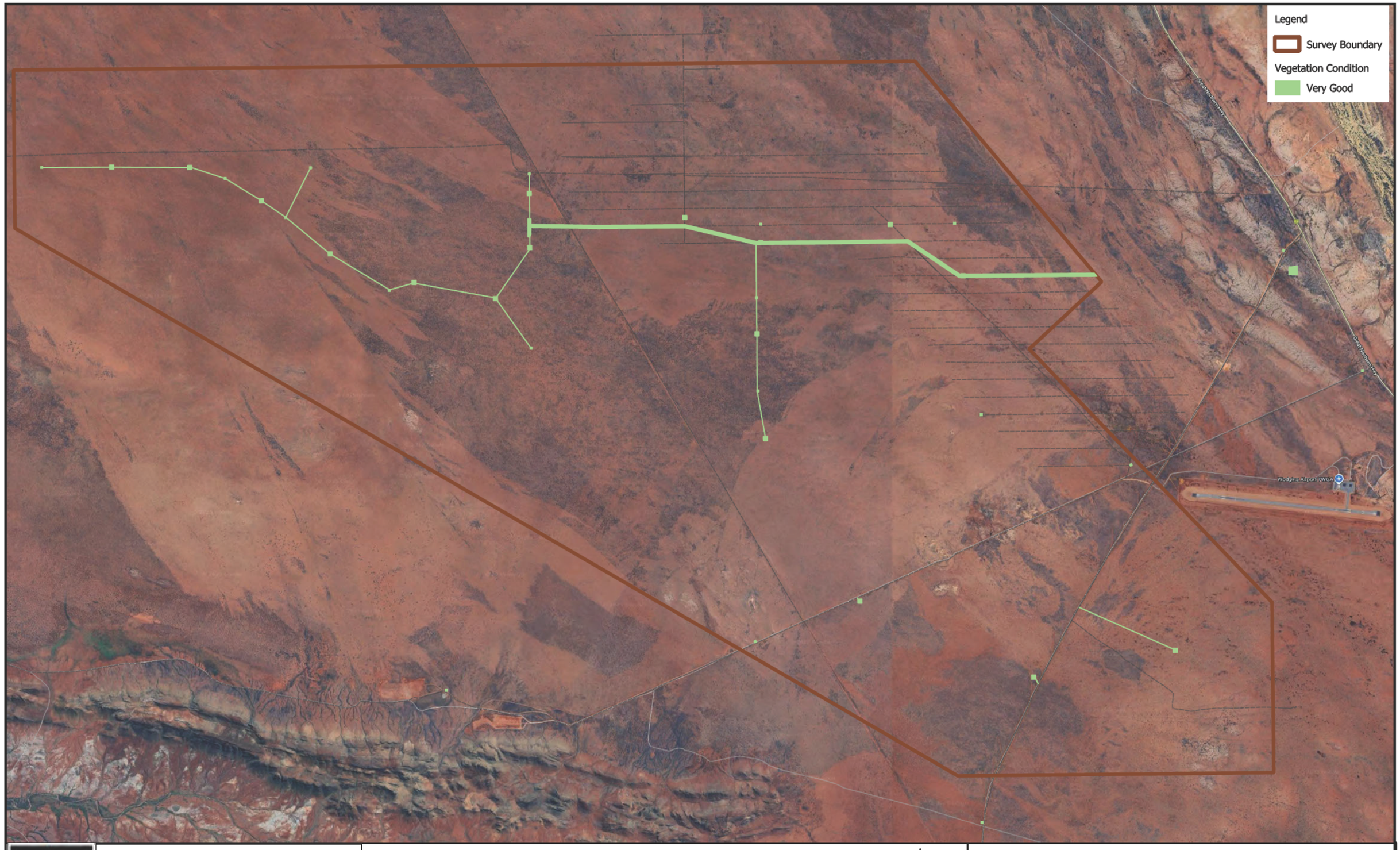
WGS 84 /
Pseudo-Mercator

Kariyarra Water Scheme

Appendix C - Umwelt Detailed Vegetation Types

Appendix D: Vegetation Condition

Indee Station and Kangan Station



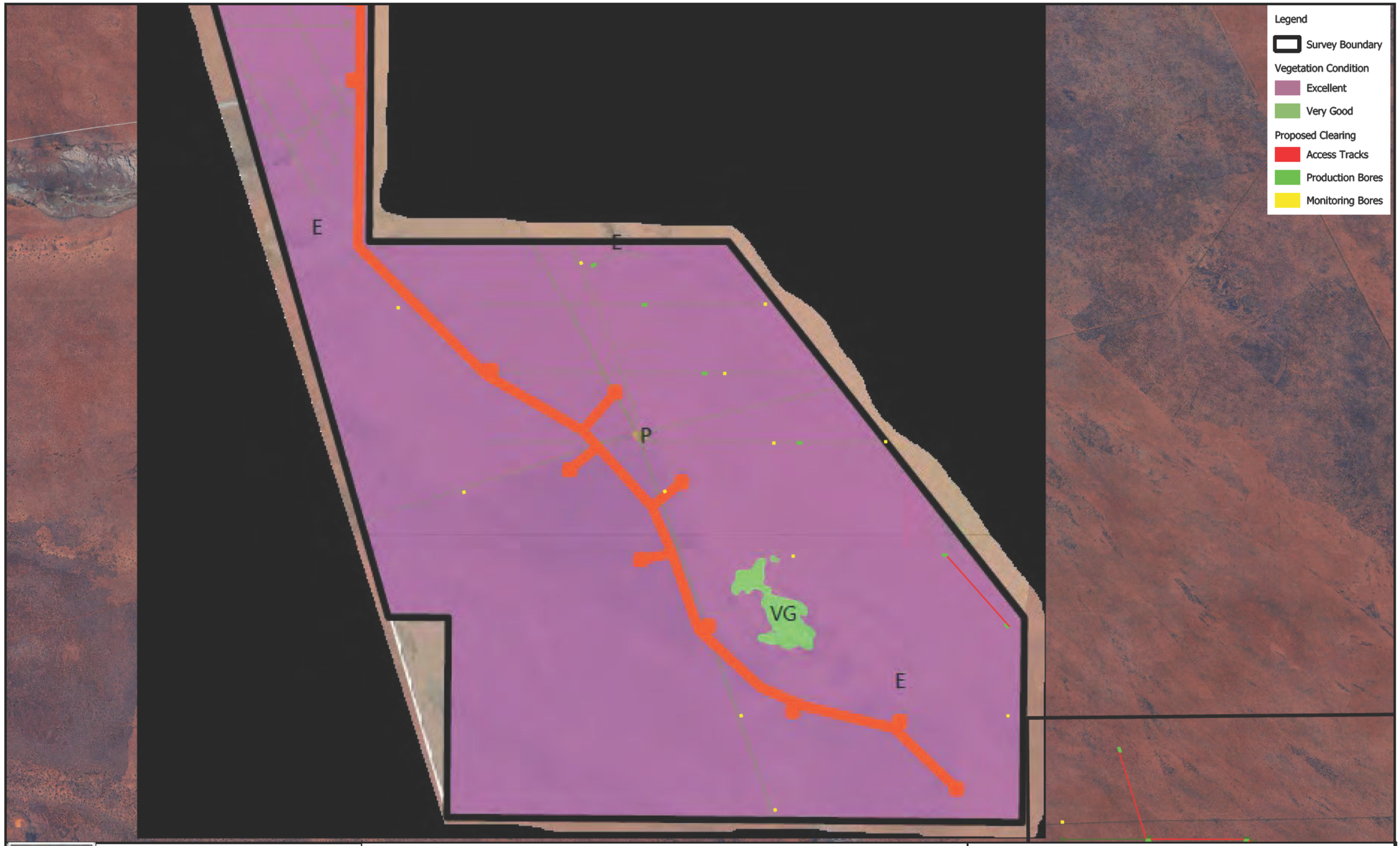
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Scale: 1:43627
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Sources:Google,DataWA

0 2 4 km

WGS 84 /
Pseudo-Mercator

Kariyarra Water Scheme

Appendix D - Emerge Associates Vegetation Condition



Project code:
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Date: 17/01/2025
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Sources:Google,DataWA

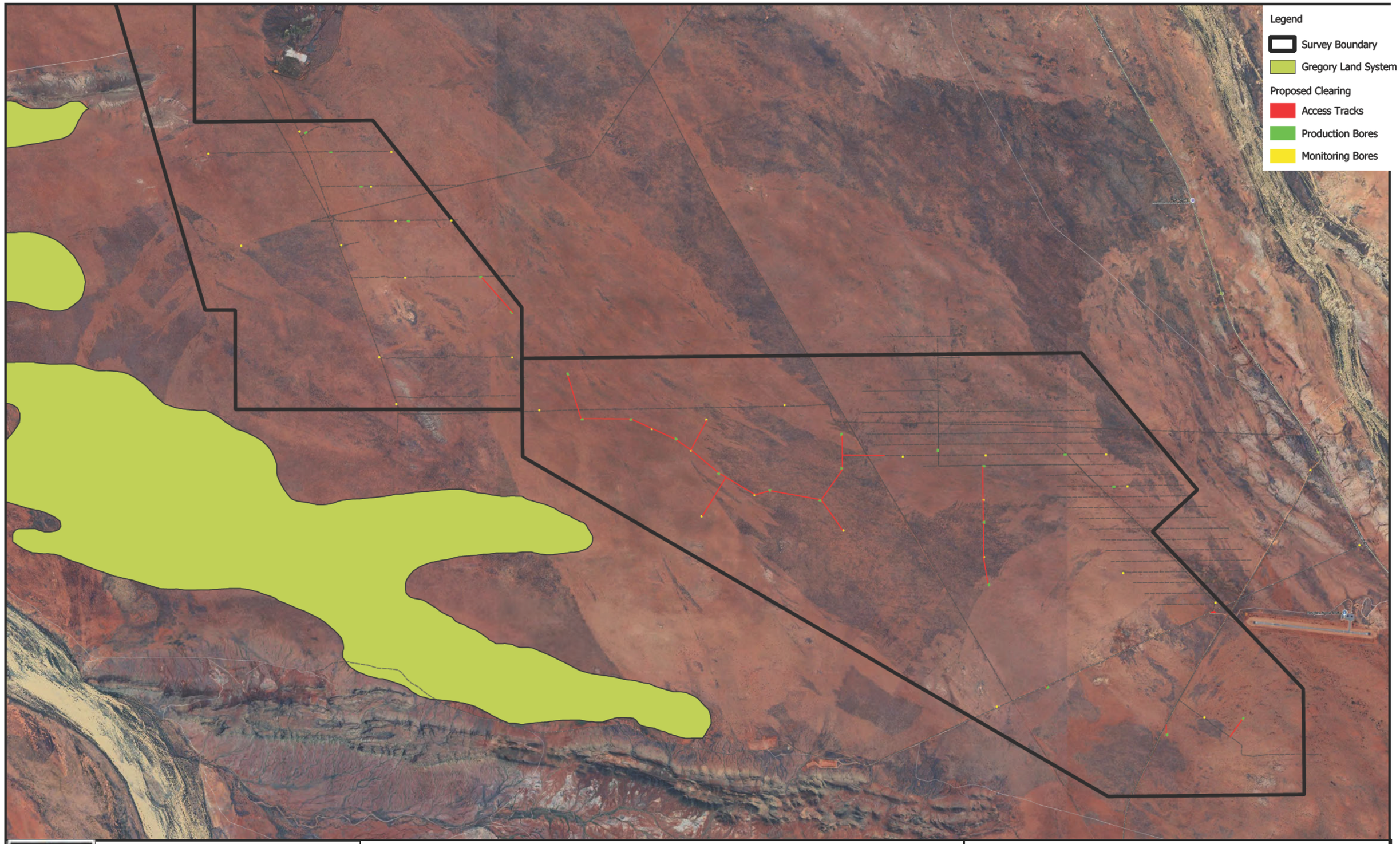
0 2 4 km

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Kariyarra Water Scheme

Appendix D - Umwelt Associates Vegetation Condition

Appendix E: Gregory Land System



Project code:
Drawn by: DHH
Date: 17/01/2025
Scale: 1:70000
Page size: A4
Sources:Google,DataWA

0 4 8 km

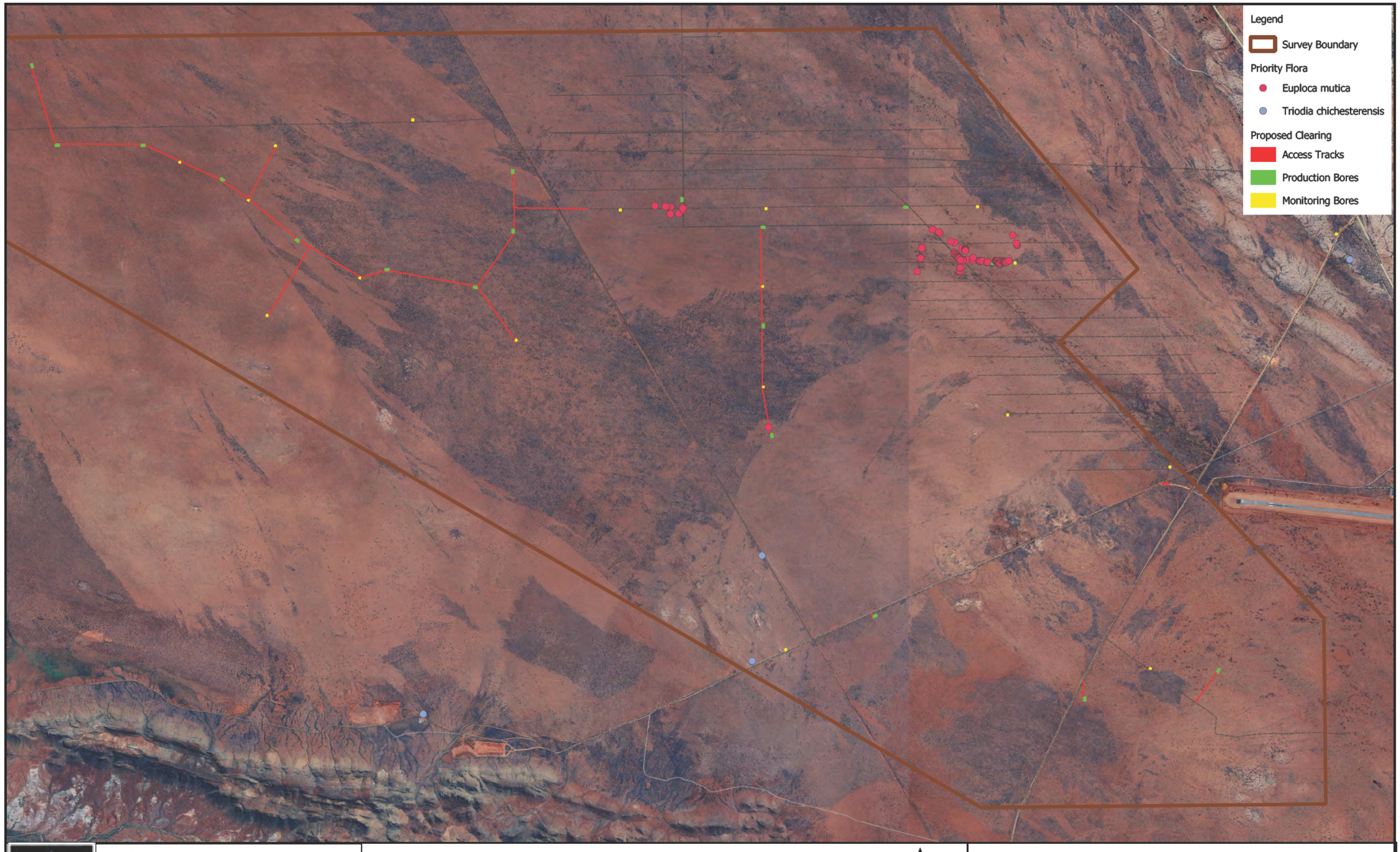
WGS 84 /
Pseudo-Mercator

Kariyarra Water Scheme

Appendix E - Gregory Land System

Appendix F: Priority Flora

Indee Station and Kangan Station



Project code:
Drawn by: DHH
Date: 20/01/2025
Scale: 1:40000
Page size: A4
Sources:Google,DataWA

0 2 4 km

WGS 84 /
Pseudo-Mercator

Kariyarra Water Scheme

Appendix F - Emerge Associates Vegetation Type



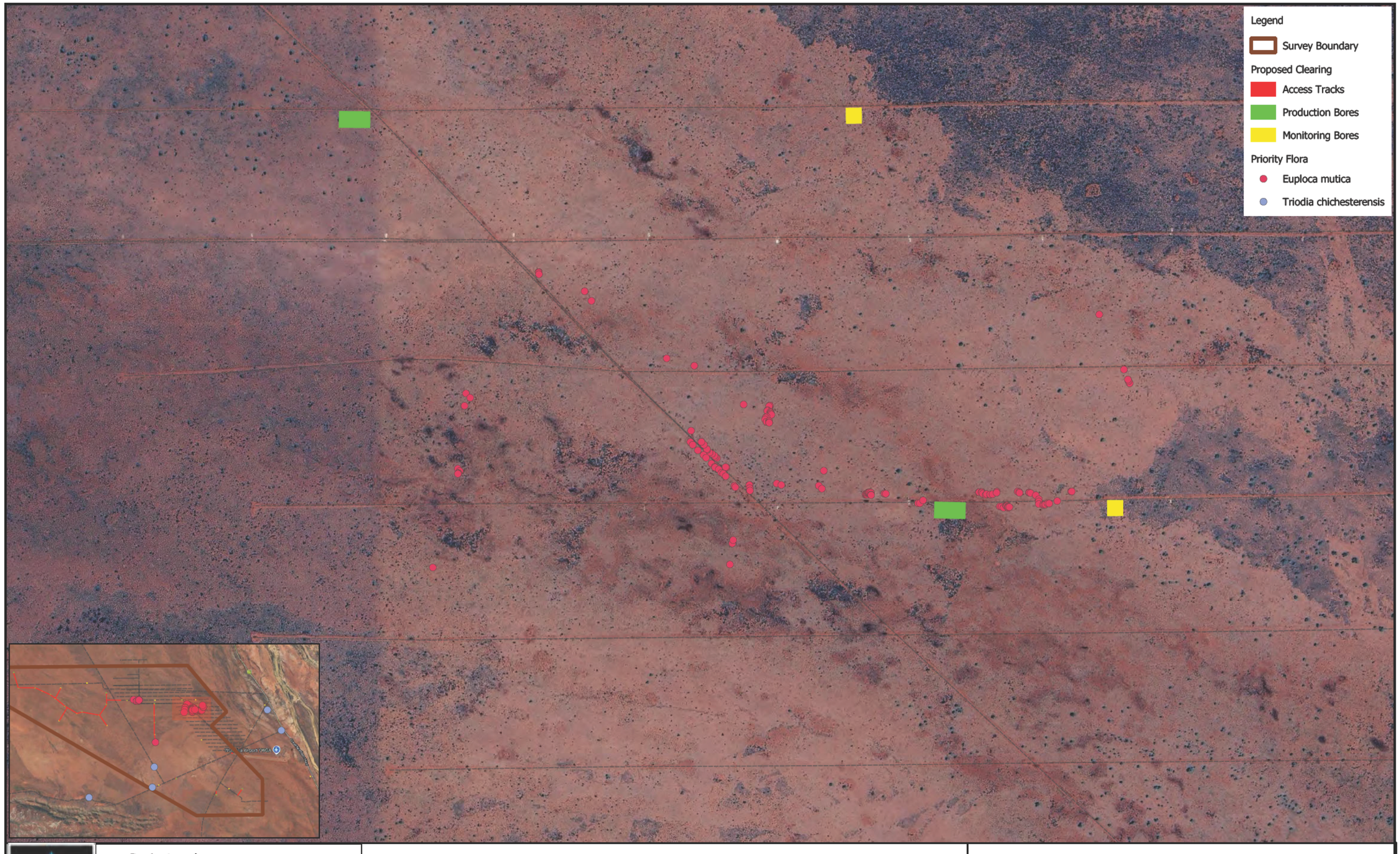
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Scale: 1:5746
Page size: A4
Sources:Google,DataWA

0 0.4 0.8 km

WGS 84 /
Pseudo-Mercator

Kariyarra Water Scheme

Appendix F - Emerge Priority Flora



Project code:
Drawn by: DHH
Date: 21/01/2025
Scale: 1:5746
Page size: A4
Sources:Google,DataWA

0 0.4 0.8 km

WGS 84 /
Pseudo-Mercator

Kariyarra Water Scheme

Appendix F - Emerge Priority Flora



Project code:
Drawn by: DHH
Date: 21/01/2025
Scale: 1:5746
Page size: A4
Sources:Google,DataWA

0 0.4 0.8 km

WGS 84 /
Pseudo-Mercator

Kariyarra Water Scheme

Appendix F - Emerge Priority Flora

Legend

Survey Boundary

Proposed Clearing

Access Tracks

Production Bores

Monitoring Bores

Priority Flora

Euploca mutica

Triodia chichesterensis

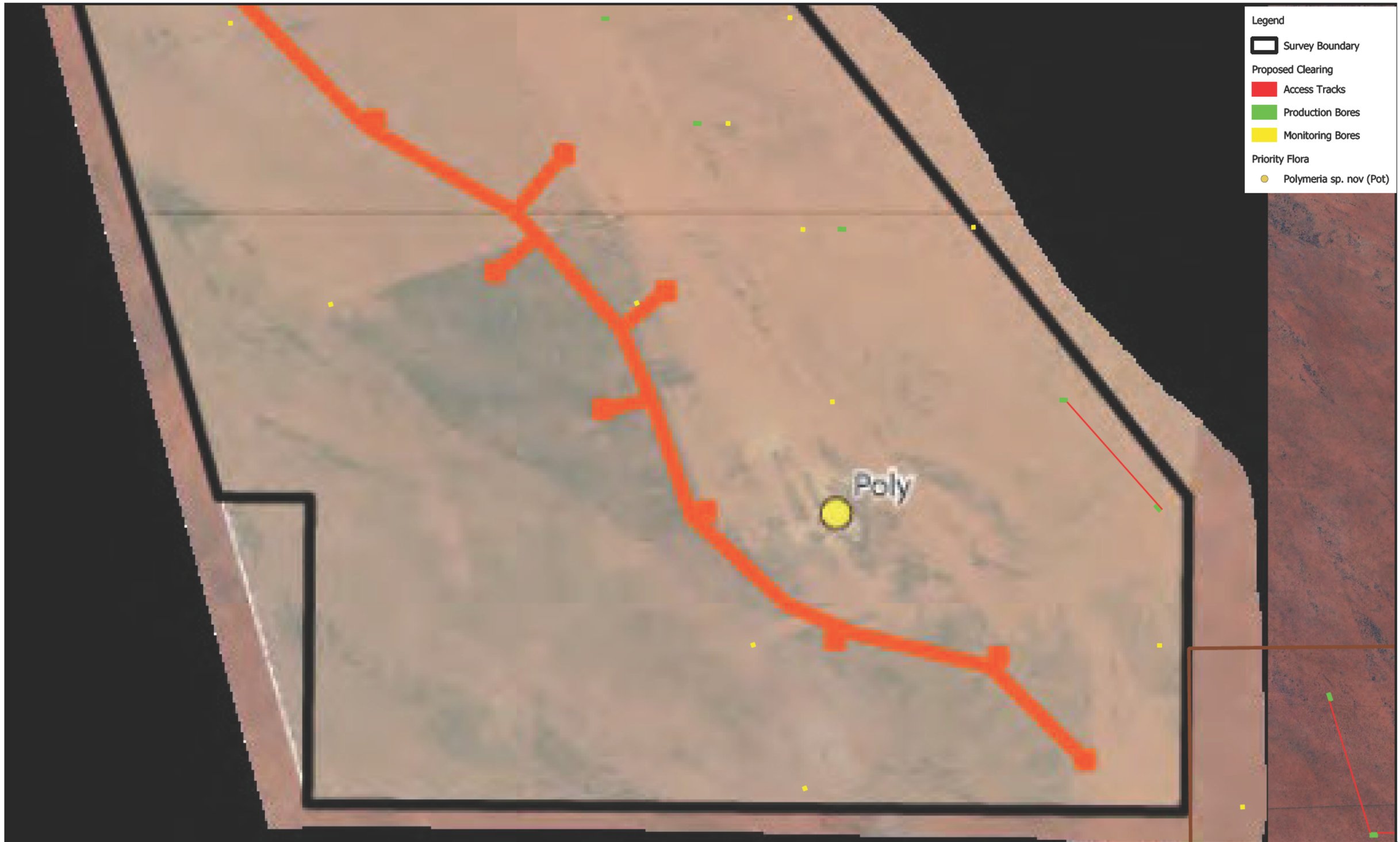
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Date: 21/01/2025
Scale: 1:5746
Page size: A4
Sources:Google,DataWA

0 0.4 0.8 km

WGS 84 /
Pseudo-Mercator

Kariyarra Water Scheme

Appendix F - Emerge Priority Flora



Project code:
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Date: 21/01/2025
Scale: 1:22986
Page size: A4
Sources:Google,DataWA

0 1 2 km

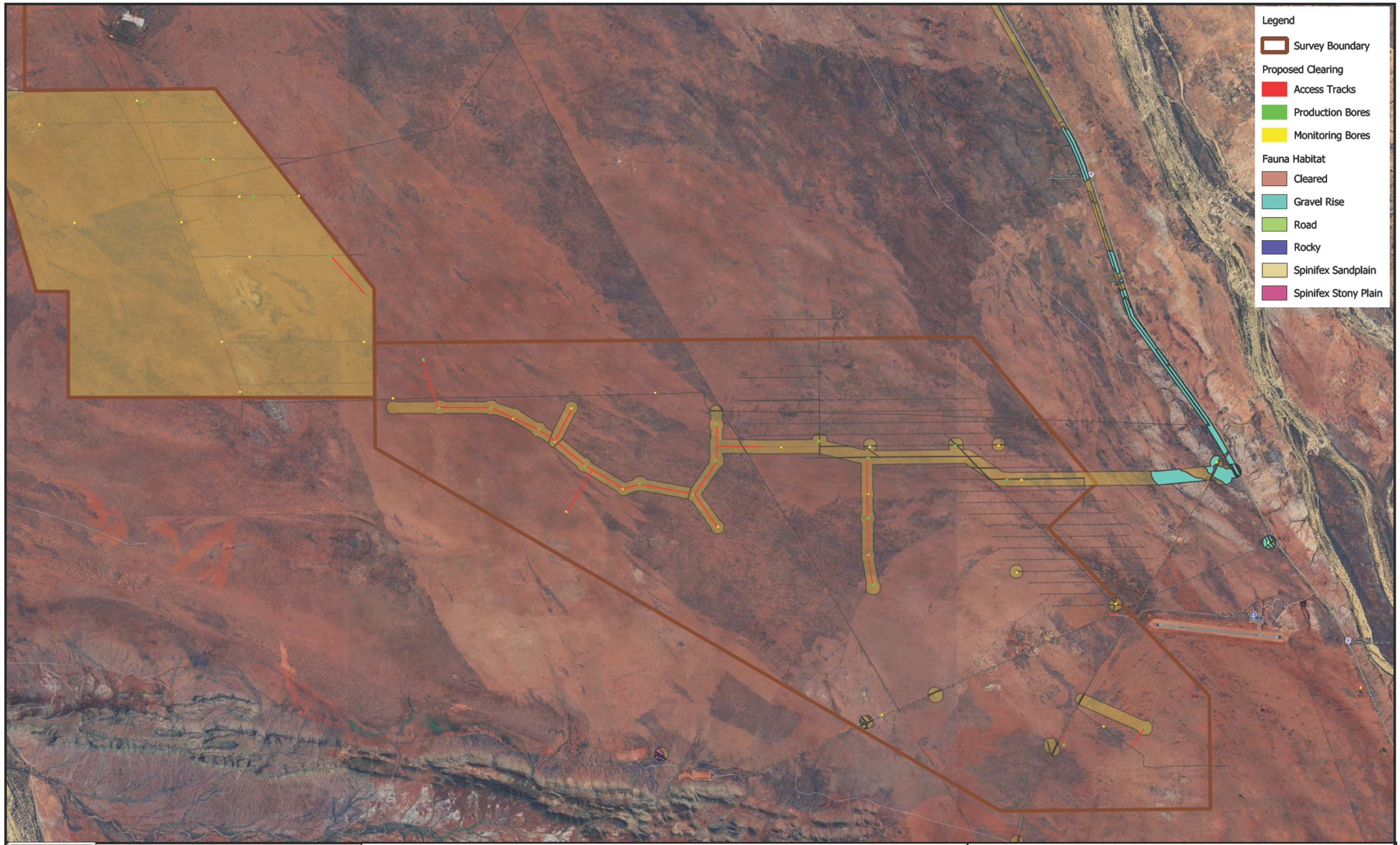
WGS 84 /
Pseudo-Mercator

Kariyarra Water Scheme

Appendix F - Umwelt Priority Flora

Appendix G: Fauna Habitat

Indee Station and Kangan Station



Project code:
Drawn by: DHH
Date: 21/01/2025
Scale: 1:65753
Page size: A4
Sources:Google,DataWA

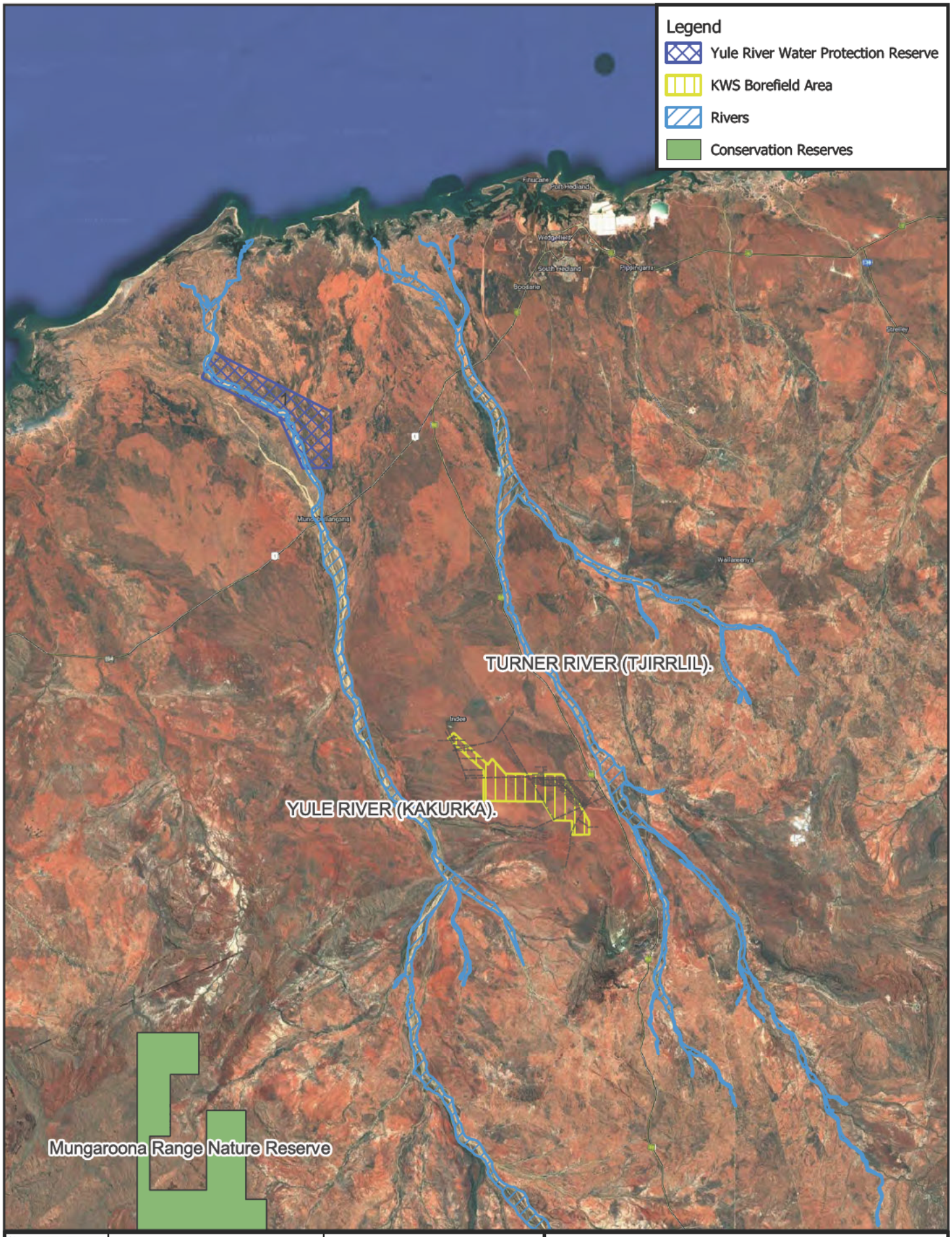
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WGS 84 /
Pseudo-Mercator

Kariyarra Water Scheme

Appendix G - Fauna Habitat

Appendix H: Regional Hydrological Values and Conservation Reserves



Date: 21/01/2025
Scale: 1:685649
Page size: A4
Sources: data.gov.au

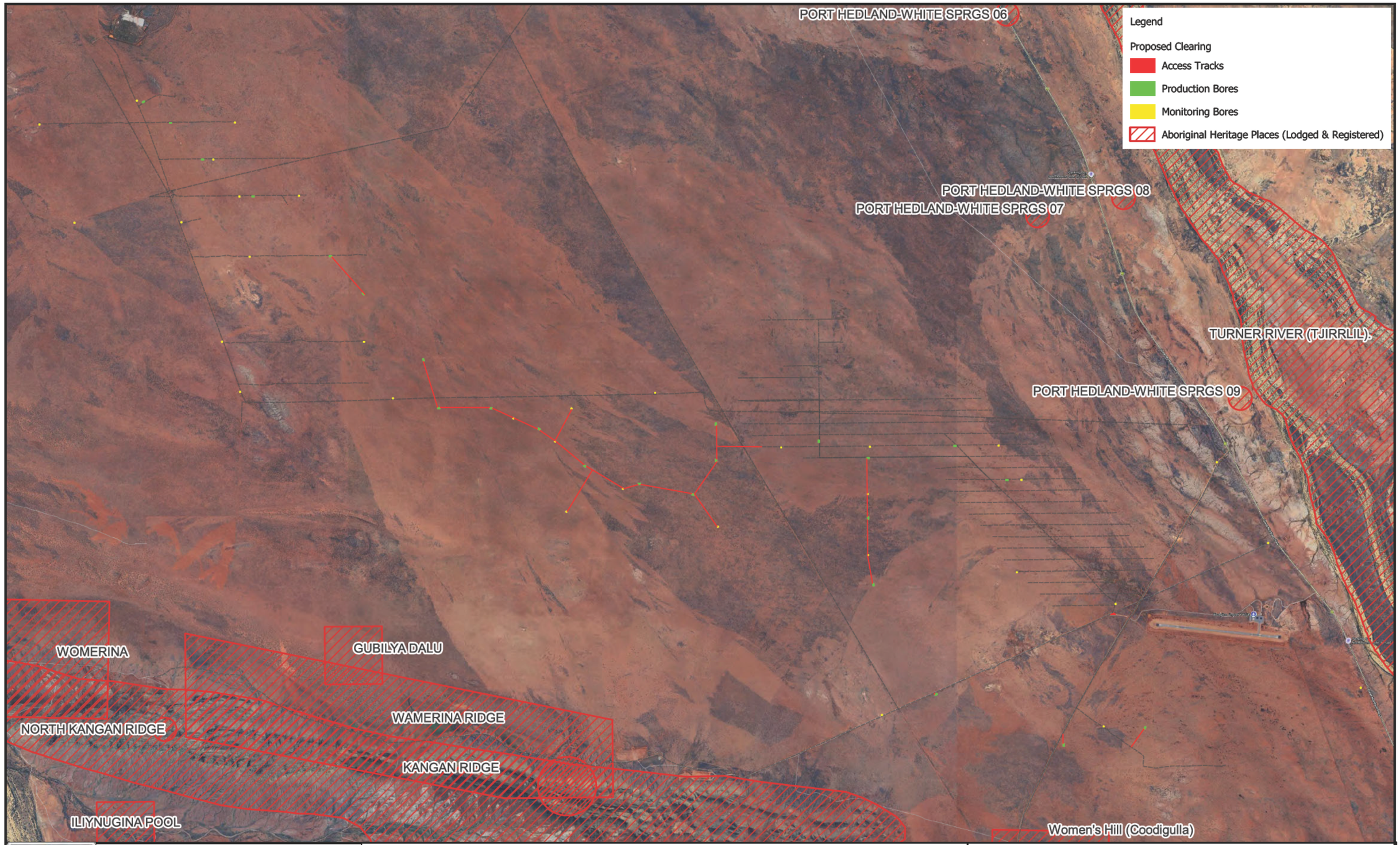
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WGS 84 / Pseudo-Mercator

Kariyarra Water Scheme

Appendix H - Regional Hydrogeological Values & Conservation Reserves

Appendix I: Heritage Sites



Project code:
Drawn by: DHH
Date: 21/01/2025
Scale: 1:65753
Page size: A4
Sources:Google,DataWA

0 4 8 km

WGS 84 /
Pseudo-Mercator

Kariyarra Water Scheme

Appendix I - Aboriginal Heritage Places

Appendix J: Application Boundary Reference Points

Application Boundary	Indee Station Map Reference: Indee Station Footprint Area 2.2ha • MultiPolygon (((118.50435310492859742 - 21.00023342883705979, 118.50434254229179487 - 21.00002399865284985, 118.50456687257855037 - 21.00001413758313973, 118.50457743521535292 - 21.00022356778116617, 118.50435310492859742 - 21.00023342883705979))) • MultiPolygon (((118.54827884373318625 - 20.99937277884118458, 118.54827884373318625 - 20.99916311542139269, 118.54850342255420514 - 20.99916311542139269, 118.54850342255420514 - 20.99937277884118458, 118.54827884373318625 - 20.99937277884118458))) • MultiPolygon (((118.47888548590779578 - 20.99897216156604074, 118.47896722285896942 - 20.99916744566717597, 118.47875804657526544 - 20.99924375409105082, 118.47867630962403496 - 20.99904847008975395, 118.47888548590779578 - 20.99897216156604074))) • MultiPolygon (((118.47593328518006217 - 20.9913305890484807, 118.47572023100346428 - 20.99139689395362041, 118.47564921294454621 - 20.99119797914990215, 118.47586226712118673 - 20.99113167415644554, 118.47593328518006217 - 20.9913305890484807))) • MultiPolygon (((118.49971301000817903 - 20.99118622468514062, 118.49971301000817903 - 20.99139589930745231, 118.49948843118716013 - 20.99139589930745231, 118.49948843118716013 - 20.99118622468514062, 118.49971301000817903 - 20.99118622468514062))) • MultiPolygon (((118.48054175634372598 - 20.97785990268114276, 118.48055014595345824 - 20.9780694496395661, 118.48032572389284667 - 20.97807728316503173, 118.48031733428308598 - 20.97786773621758982, 118.48054175634372598 - 20.97785990268114276))) • MultiPolygon (((118.4689131235050894 - 20.9727080243175763, 118.46882843781042993 - 20.97251380402341425, 118.46903643776224158 - 20.97243472854564672, 118.46912112345694368 - 20.9726289489425568, 118.4689131235050894 - 20.9727080243175763))) • MultiPolygon (((118.4509108432904867 - 20.97256563864766221, 118.45112750881202146 - 20.97251046267967922, 118.45118659940882822 - 20.97271277446271043, 118.45096993388729345 - 20.97276795035602603, 118.4509108432904867 - 20.97256563864766221))) • MultiPolygon (((118.47882520215981117 - 20.96844423365300614, 118.47881547722396078 - 20.96865374348353228, 118.47859110906115632 - 20.96864466256815618, 118.47860083399702091 - 20.96843515272492198, 118.47882520215981117 - 20.96844423365300614))) • MultiPolygon (((118.48880269441136193 - 20.96831443912474668, 118.48881023901833487 - 20.96852402747130384, 118.48858578696162169 - 20.96853107245263814, 118.48857824235466296 - 20.96832148411596819, 118.48880269441136193 - 20.96831443912474668)))

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	• MultiPolygon (((118.60995640407591623 -21.01276903618472858, 118.60995751036213619 -21.01297867794374241, 118.609732934265935 -21.01297971066105674, 118.60973182797971504 -21.01277006890346755, 118.60995640407591623 -21.01276903618472858))) • MultiPolygon (((118.60612568833711578 -21.00740505983874939, 118.60612880718659312 -21.00761469146143057, 118.60590425002318682 -21.00761760300965975, 118.60590113117368105 -21.00740797139108196, 118.60612568833711578 -21.00740505983874939))) • MultiPolygon (((118.66676706530374474 -21.04555880849283866, 118.66659337781665329 -21.04542593819285656, 118.66673574460936891 -21.04526383626635067, 118.666909432096503 -21.04539670671096374, 118.66676706530374474 -21.04555880849283866))) • MultiPolygon (((118.5952878429961288 -21.04642831189870122, 118.59569558731506334 -21.0462524982426018, 118.59580861552748843 -21.04648082462151137, 118.59540087120852547 -21.04665663800800246, 118.5952878429961288 -21.04642831189870122))) • MultiPolygon (((118.55873479870855647 -21.00438872712439675, 118.55846530483167101 -21.00438811512006154, 118.55846676254955696 -21.00396880428518287, 118.55873625571548757 -21.00396962080158403, 118.55873479870855647 -21.00438872712439675))) • MultiPolygon (((118.55877928598670223 -21.01005828226755412, 118.55850978954825337 -21.01005870519382768, 118.55850720562646927 -21.00963941502476118, 118.55877669575224331 -21.00963796773898551, 118.55877928598670223 -21.01005828226755412))) • MultiPolygon (((118.55503426915299769 -21.01508638128359507, 118.55498756491974177 -21.01533414389795951, 118.55454520368580518 -21.01526148108517589, 118.5545919079190611 -21.01501371835011156, 118.55503426915299769 -21.01508638128359507))) • MultiPolygon (((118.54601097575560686 -21.01361904470974551, 118.54556301569195398 -21.01364964240735489, 118.54554334915255254 -21.01339874110168893, 118.54599130921621963 -21.01336814335260783, 118.54601097575560686 -21.01361904470974551))) • MultiPolygon (((118.53688874759473038 -21.01072881810679505, 118.53673782409497051 -21.01093724334248947, 118.53636570766792602 -21.01070242832745905, 118.53651663116768589 -21.01049400276369283, 118.53688874759473038 -21.01072881810679505))) • MultiPolygon (((118.5290760424008738 -21.00515212745256122, 118.52869349710107372 -21.00493239280790547, 118.52883472247116003 -21.00471811765341812, 118.52921726777098854 -21.00493785261361523, 118.5290760424008738 -21.00515212745256122))) • MultiPolygon (((118.52110995941140459 -21.00154677798806802, 118.52111382471477441 -21.00179834415898483, 118.5206647132744564 -

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