# Clearing Assessment Report – CPS 818

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## Tanami Road Upgrade Stage 1 Pre-Construction Activities

September 2022

EOS 1890



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# Contents

# Amendments

| Report Compilation & Review | Name and Position | Document Revision | Date |
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# 1 PURPOSE

The purpose of this Clearing Assessment Report (CAR) is to provide a report detailing the assessment of native vegetation clearing that is proposed to be undertaken using the Statewide Clearing Permit CPS 818 issued to Main Roads Western Australia (Main Roads).

The CAR outlines the key activities associated with the project, the existing environment and an assessment of native vegetation clearing. This assessment provides an evaluation of the vegetation clearing impacts associated with the project using the ten Clearing Principles, and the strategies used to manage vegetation clearing.

# 2 SCOPE

## 2.1 Project Scope

**Project Name:** Tanami Road Upgrade Stage 1 Pre-Construction Activities

**Project Purpose / Components:** MRWA are undertaking the Upgrade Road Works for the Tanami Road between SLK 0 - 60 for Stage 1 works. The pre-construction activities are proposed to allow finalisation of the project delivery planning, including final design. The scope of works under this assessment includes:

- Geotechnical Investigations (nominal 5m width) of the Proposed centreline between SLK 0 – 60 for assessment of subsurface environment and for future access to the alignment;
- Construction of water bore drill pads (nominal 50m x 50m) and drilling of new bores between SLK 0 – 60 to provide construction water needs;
- Construction of turkey's nest dams (nominal 100m x 50m or smaller) between SLK 0 – 60;
- Construction of access tracks (nominal 10m width) between the road alignment and bore sites between SLK 0 – 60 for access during drilling and for future operational access; and
- Preparation of a site for a temporary workers camp (nominal 300m x 100m) at SLK 28.

The proposed 8 new proposed bores (yet to be drilled and deemed viable) and their associated turkeys' nest are located at SLKs [Redacted], along Tanami Rd. The turkeys' nest associated with the 3 existing bores will be constructed at SLKs [Redacted].

**The proposed clearing undertaking using CPS 818 is:** Up to a maximum of 22 ha in an 87.5 ha project development envelope.

The "development envelope" sets the boundary of this assessment within which all works will be contained. The layout used for this assessment is indicative but is based on the most conservative estimate of the clearing required. Actual on-ground impacts will not exceed the estimated impacts determined in this assessment.

The Development Envelope is a tool that allows Main Roads Environment Officers to adjust the clearing boundaries in the event of unforeseen construction needs.

**The proposed temporary clearing undertaking using CPS 818 is:** Nil

**Project Location(s):** The project area is located on Tanami Road (0020025) between SLK 0 – 60 approximately 17 km south-west of Halls Creek Townsite within the Shire of Halls Creek as shown in Figure 1.

- Latitude: -18.545467
- Longitude: 127.568479

The location of the proposed works is at Figure 1. The detailed project area maps are provided in Appendix 3.

The Tanami Road is a Local Government Road under the care and control of the Shire of Halls Creek. In response to the Federal and State Governments committing funding to upgrade and seal the Road to the Northern Territory Border, the Shire of Halls Creek has requested Main Roads Western Australia's assistance in delivering the Project.

At over 300km in length, this will represent a substantial upgrade over many years. To maintain the funding for the Project, Main Roads intends to carry our pre-construction works on the first 20km of the Tanami Road where there is sufficient knowledge on alignment selection to carry out these works.

**Plate 1. The Tanami Road is a major unsealed national freight route**

## 2.2 Assessment Report Scope

The assessment area is confined to a local area of a 40 km radius as shown in Figure 2.

[Redacted]

**Figure 1. Project Overview Map**

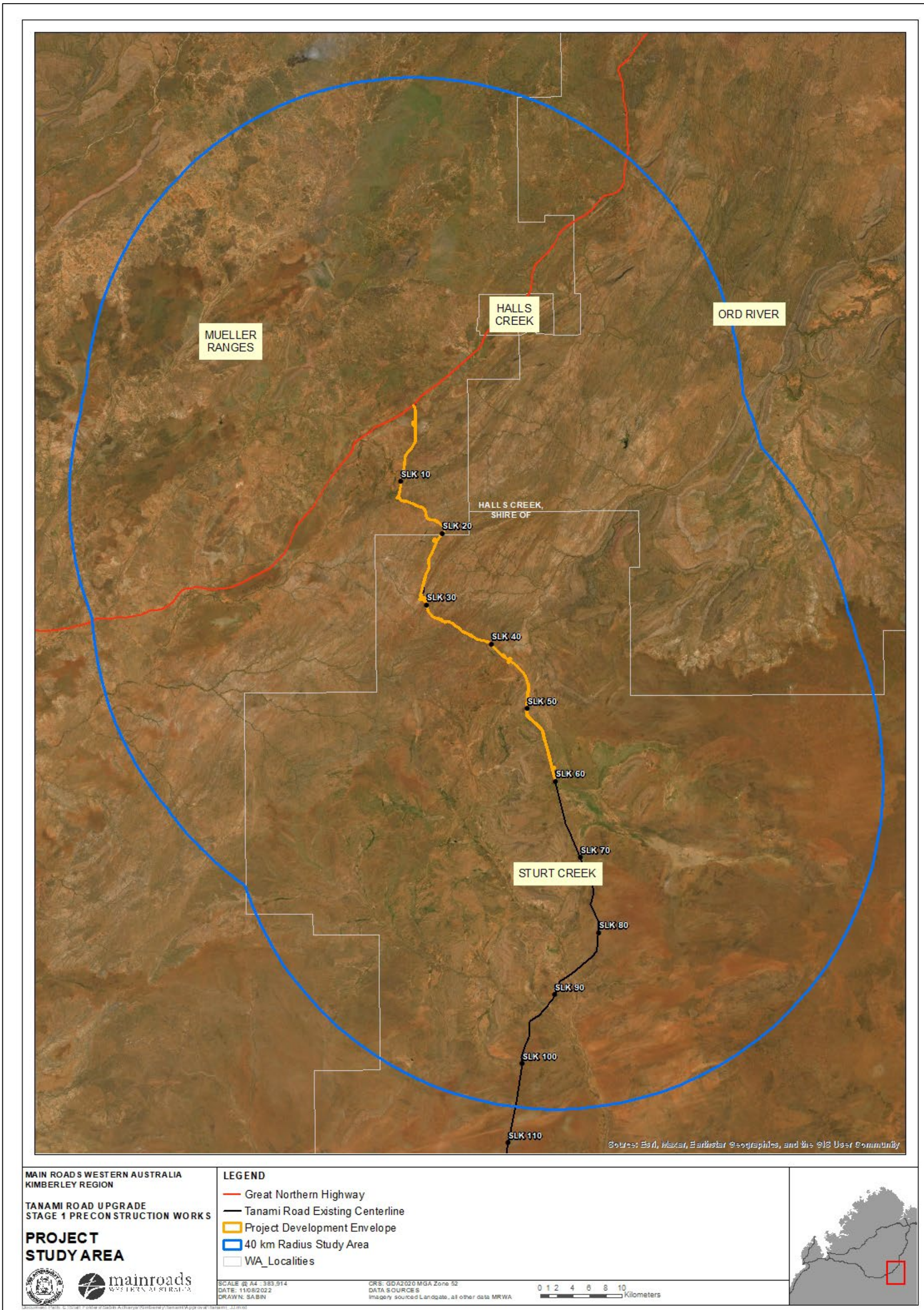



**Figure 2. Assessment Area**

## 2.3 Alternatives to clearing

As works are new upgrade works, there was limited ability to alternatives to clearing. However, measures to avoid and minimise the clearing are implemented as described in section 2.4 and Table 1.

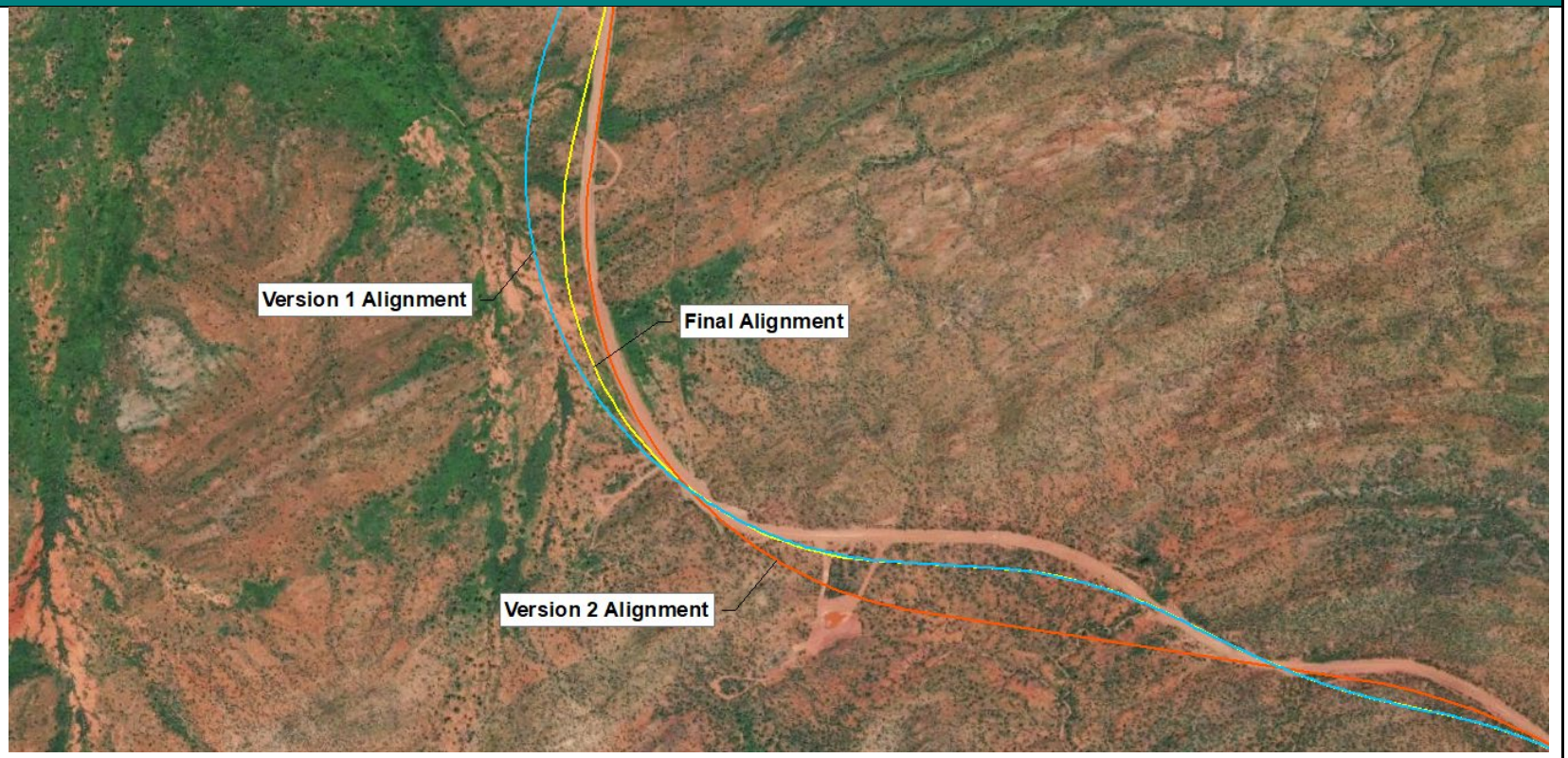
## 2.4 Measures to Avoid, Minimise, Reduce and Manage Project Clearing Impacts

The design and management measures implemented to avoid and minimise the clearing impacts by the project are provided in Table 1. In addition, the following measure are considered:

- Use of existing roads where possible for centreline Geotech investigation.
- Use of existing bores and for any new proposed bores, use of existing disturbed areas for access tracks and bore drill pad areas where available.
- Access tracks to the proposed bore sites are relocated to avoid priority flora, specifically *Goodenia lunata* (P1). 60 Individuals of *Goodenia lunata* were avoided as a result of this relocation.
- The project layout will be demarcated, areas of priority flora within the development envelope will be flagged and where possible a 5m buffer will be created to minimise and avoid impacts to the priority species.
- The project will be monitored by Main Roads Environment Officer to ensure that, in areas with priority species, no disturbance occur outside the project proposed layout.

**Table 1. Measures undertaken to Avoid, Minimise, Reduce and Manage the Project Clearing Impacts**

| Design or Management Measure | Discussion and Justification |
|---|---|
| **Steepen batter slopes** | Not applicable. |
| **Installation of safety barriers** | Not applicable. |
| **Alignment to one side of existing road** | The proposed alignment currently aims to balance safety outcomes by maintaining a suitable curve geometry for a 110km/h rated sealed national highway as well as environmental impacts. The alignment is proposed to overlay the existing roads where possible (e.g. beyond SLK 40). |
| **Alternative alignment to follow existing road (or) to preferentially locate within pasture or a degraded areas** | The proposed alignment currently aims to balance safety outcomes by maintaining a suitable curve geometry for a 110km/h rated sealed national highway as well as environmental impacts. The alignment is proposed to overlay the existing roads where possible (e.g. beyond SLK 40). Some realignment is required between SLK 10 and 40, where the terrain is hilly with many tight corners and blind crests necessitating a new alignment with larger turn radiuses and smoother vertical geometry changes. Another area between SLK 47 and 51 was realigned to avoid culturally sensitive areas by request of Traditional Owners.<br><br>A number of preliminary design revisions were undertaken with the specific aim of reducing environmental impact through minimising clearing required for the upgrade as well as reducing the amount of fill required, thereby reducing future clearing for material pits. Clearing for the centreline Geotech has been reduced by 15% from the first concept design and subsequent impacts to Priority flora species reduced by 5% from the first concept to current design. Reductions to priority flora impact is considerably less than the reduction in clearing impacts due to the large numbers of flora that has colonised the existing road formation. |

| Design or Management Measure | Discussion and Justification |
|---|---|
| |  <br>*A number of design alignments were considered. The final alignment is a better compromise between safety and environmental impact* |
| **Installation of kerbing** | Not applicable |
| **Simplification of design to reduce number of lanes and/or complexity of intersections** | Not applicable |

| Design or Management Measure | Discussion and Justification |
|---|---|
| **Preferential use of existing cleared areas for access tracks, construction storage and stockpiling** | Where possible, the layout for pre-construction works uses existing cleared areas and tracks. For example, the access points to the SLK 28 Dam and Camp area.<br><br>However, as a number of areas are greenfield sites, there is limited ability to use existing cleared areas for access (e.g. new bore sites and tracks are required) |
| **Drainage modification** | Not applicable. |
| **Development envelope** | The proposed development envelope (current design) has been reduced from >300 ha to approximately 88 ha to reduce the potential environmental impacts within which only 22 ha is proposed to be cleared. This has resulted in known populations for 3 priority flora species being excluded from the development envelope. The Envelope has been through a number of revisions to better make use of existing cleared areas (e.g. existing tracks or more direct routes) available for consideration). |

## 2.5 Approved Policies and Planning Instruments

The clearing of native vegetation in Western Australia is regulated under the EP Act and the Environmental Protection (Clearing of Native Vegetation) Regulations 2004 (Clearing Regulations).

In addition to the matters considered in accordance with section 51O of the EP Act (see Section 1.3), Main Roads has also had regard to the below instruments.

**Other Legislation of relevance for assessment of clearing and planning/other matters**

- Biodiversity Conservation Act 2016 (WA) (BC Act)
- Conservation and Land Management Act 1984 (WA) (CALM Act)
- Country Areas Water Supply Act 1947 (WA) (CAWS Act)
- Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act)
- Planning and Development Act 2005 (WA) (P&D Act)
- Soil and Land Conservation Act 1945 (WA)
- Rights in Water and Irrigation Act 1914
- Aboriginal Heritage Act 1972 (WA)
- Town Planning and Development Act 1928

**Environmental Protection Policies**

- Environmental Protection (Peel Inlet - Harvey Estuary) Policy 1992;
- Environmental Protection (Western Swamp Tortoise Habitat) Policy 2011

**Other Relevant policies and guidance documents:**

- Environmental Offsets Policy (Government of Western Australia, 2011)
- A guide to the assessment of applications to clear native vegetation (DEC, December 2014)
- Procedure: Native vegetation clearing permits (DWER, October 2019)
- Environmental Offsets Guidelines (Government of Western Australia, August 2014)
- Technical guidance – Flora and Vegetation Surveys for Environmental Impact Assessment (EPA, 2016)
- Technical guidance – Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment (EPA, 2020)
- Approved conservation advice under section 266B of the EPBC Act for threatened flora/fauna/vegetation communities
- Approved Recovery Plans for threatened species
- EPBC Act Referral guidelines for the three threatened black cockatoo species
- Strategic advice - EPA

# 3 SUMMARY OF SURVEYS

## 3.1 Biological Survey

The "Tanami Road Upgrade SLK 0-60 Biological Survey" was conducted on 23rd of May to 8th June 2020 by Biota Environmental Sciences. Section 3.1.1 contains the summary of the survey.

### 3.1.1 Summary of Biological Survey

Main Roads commissioned Biota Environmental Sciences (Biota) to carry out a biological survey to identify key flora and fauna values relevant to the proposed upgrade works on a 60 km section of Tanami Road between SLK 0 - 60. The spatial scopes for the biological survey comprised a Survey area (200-500 m from road corridor), a contextual area (500 m buffer around the survey area) and the study area (40 km buffer around the survey area). A desktop flora and fauna assessment was undertaken for the study area, followed by a field survey which comprised a detailed and targeted flora and vegetation survey and a basic and targeted fauna survey of the survey area.

**Vegetation**
13 vegetation types were identified from the survey area, associated with drainage lines, plains and hills. None of the vegetation types represent listed Threatened Ecological Communities (TECs), or Priority Ecological Communities (PECs). The vegetation type P10 shared some similarities to the two tussock grassland communities in the study area that are listed as PECs and was considered to be of local significance. Two vegetation types from drainage line habitats (D3 and D4) were considered to represent Groundwater Dependent Ecosystems and were also considered to be locally significant.

**Flora**
A total of 414 native vascular flora species from 165 genera and 57 families were recorded from the survey area. No Threatened flora were recorded. Five species were confirmed to be Priority species, while a sixth was tentatively identified as such. These comprised two P1 species- *Goodenia lunata* and *Pentalepis trichodesmoides* subsp. ? *incana*; one P2 species - *Ipomoea racemigera*; and three P3 species - *Glycine falcata, Goodenia crenata* and *Trachymene dusenii*. Nine taxa recorded were designated as "Species of Interest" as they may be new (undescribed) species) or cannot be referred to any known taxa recognised for Kimberley. A total of 26 weed species were recorded, including one significant weed species **Calotropis procera* (Calotrope) which is a Declared Plant and was found scattered through plains and drainage lines throughout the survey area.

**Fauna**
A combined total of 114 species of vertebrate fauna were recorded, including 10 mammals, 9 bats, 72 birds, 20 reptiles and 3 amphibians. No fauna species of significance were recorded, however a cluster of burrows and diggings potentially belonging to Bilby *Macrotis lagotis* (VU*)* was recorded from the contextual area. An assessment indicated that 8 fauna species of significance were considered likely to occur within the survey area. These included: Ghost Bat *Macroderma gigas* (VU), Grey Falcon *Falco hypoleucos* (VU), Peregrine Falcon *Falco peregrinus* (OS), Fork-tailed Swift *Apus pacificus* (MI), Oriental Plover *Charadrius veredus* (MI), Oriental Pratincole *Glareola maldivarum* (MI), Gravel Dragon *Cryptagama aurita* (P1) and Yellow-lipped Cave Bat *Vespadelus douglasorum* (P2).

Nine fauna habitats were described for the survey area of which the *Acacia monticola* tall open scrub was considered to have the highest local significance due to its potential provision of habitat for Bilby.

## 3.2 Summary of Additional Survey

Two additional targeted surveys were completed following the work by Biota (2021a):

- "Tanami Road Upgrade Targeted Flora" Survey was conducted on 21st - 25th May 2021 by 360 Environmental (360 Environmental 2022).
- "Tanami Road Upgrade and Great Northern Highway Material Pit Areas: Flora Survey", conducted on 14th – 25th June 2021 by Biota Environmental Sciences (Biota 2021b)

Section 3.2.1 contains the summary of both follow up surveys.

### 3.2.1 Summary of Targeted Flora Survey – 360 Environmental 2022

Main Roads WA commissioned 360 Environmental Pty Ltd (360 Environmental) to undertake a Targeted Flora survey of significant flora previously identified by Biota, (2021a). This survey focused on surveying material areas and proposed bore sites.

Based on previous results Main Roads WA identified seven priority flora taxa, one potential priority taxa and 21 further taxa considered range extensions, or species of interest, to target during the survey. Of these, three priority flora, and four species of interest were recorded by the systematic searches as detailed below:

- *Ipomoea racemigera* (P2) - 135 individuals from two locations outside the Survey Area.
- *Goodenia crenata* (P3) and *Goodenia* aff. *crenata* (P3) – Total of 1,301 individuals from 32 locations.
- *Trachymene dusenii* (P3) - 2203 individuals from 155 locations

Three species that are of interest recorded were:

- *Aristida* aff. *jerichoensis* (Potential novel taxon) – 1 individual
- *Cyperus* sp. (TAN14-14) (Potential novel taxon) - 17 individuals from nine locations
- *Solanum echinatum* (Range Extension) - 45 individuals from nine locations

One additional species not previously identified was recorded:

- *Euphorbia schultzii* var. *comans* (Range Extension) - 1 individual

All targeted taxa that were not recorded were considered highly unlikely to occur within the Survey Area.

### 3.2.2 Summary of Targeted Flora Survey – Biota 2021b

Main Roads commissioned Biota to undertake additional targeted surveys for Priority flora species and other species of interest that were identified as occurring or potentially occurring in the survey area during the initial survey by Biota, 2021a. The survey area was traversed at 50-100 m intervals, with the exception of areas that were considered relatively well surveyed in 2020, and areas surveyed in 2021 by 360 Environmental. This survey focused on surveying the proposed alignment between SLK 0-60.

Additional populations were recorded for all six Priority species documented for the survey area by Biota, 2021a:

- *Goodenia lunata* (P1) –18,619 individuals from 440 locations;
- *Pentalepis trichodesmoides* subsp. *incana* (P1) – 27 individuals from 18 locations;
- *Ipomoea racemigera* (P2) – 12 individuals from 10 locations;
- *Glycine falcata* (P3) –383 individuals from 77 locations;

- *Goodenia crenata* (P3) – 41,972 individuals from 1548 locations; and
- *Trachymene dusenii* (P3) – 2,566 individuals from 202 locations.

Additional populations were also recorded for eight of the 10 species of interest that were initially recorded:

- *Cullen* sp. (TAN-TW07) - 2,682 individuals at 194 locations;
- *Cyperus* sp. (TAN14-14) – 45 individuals at 9 locations;
- *Euphorbia ferdinandi* var. ? *appendiculata* – 23 individuals at 9 locations;
- *Euphorbia* sp. (TAN11-06) – 41 individuals at 16 locations;
- *Pittosporum* aff. *angustifolium* – 4 individuals at 4 locations;
- *Portulaca* ? sp. finely echinate (D.G.Tulloch 41) – 41 individuals at 8 locations;
- *Sida* sp. (TAN01-17) – 66 individuals at 22 locations; and
- *Triodia* sp. (TAN07-02/34) – at least 15,000 individuals at 24 locations.

The remaining two species of interest appear uncommon in the area:

- *Aristida* aff. *jerichoensis* was observed at the original collection location but no other populations were found; and
- Convolvulaceae sp. (TAN02-49) was not found at the original collection site or any other locations.
- *Kohautia australiensis* (P2) – 2 individuals at a single location on the eastern edge of the survey area, a new collection for the area, filling in a gap in the range of the species.

# 4 VEGETATION DETAILS

### 4.1.1 Project Site Vegetation Description

The Biological Survey undertaken by Biota (2021a) mapped 13 vegetation units from within the Project Development Envelope comprising three units on hills (H1, H2 and H4), seven units on plains (P2, P3, P4, P5, P7, P8 and P10) and three units in drainage lines (D3, D4 and D5) as described in detail below:

**Table 2. Vegetation Types Representation within the Project Development Envelope (Biota, 2021)**

| Type | Description (Biota 2021a) | Extent within Survey Area (ha) | Extent in Development Envelope (ha) (% of Surveyed Area) | Estimated Impact (ha) (% of Surveyed Area) |
|---|---|---|---|---|
| **Hills** | | | | |
| **H1** | *Eucalyptus brevifolia, Corymbia opaca* scattered low trees to low open woodland over *Triodia intermedia* hummock grassland. | 1930.6 | 16.5 (0.85%) | 10.2 (0.53%) |
| **H2** | *Corymbia opaca, Eucalyptus brevifolia* low open woodland over *Triodia wiseana* hummock grassland. | 1066.8 | 1.4 (0.13%) | 1.3 (0.12%) |
| **H4** | *Eucalyptus brevifolia* low open woodland over *Triodia* sp. (TAN07-02/34), *T. epactia* open hummock grassland. | 80.9 | 0.4 (0.49%) | 0 (0%) |
| **Plains** | | | | |
| **P2** | *Eucalyptus brevifolia, (Corymbia opaca)* low open woodland over *Triodia intermedia* open hummock grassland over *Eulalia aurea, Chrysopogon fallax* open tussock grassland. | 562.9 | 0.5 (0.09%) | 0.2 (0.04%) |
| **P3** | *Corymbia opaca, Bauhinia cunninghamii, Atalaya hemiglauca* scattered low trees to low open woodland over *Dichrostachys spicata, Carissa lanceolata* scattered tall shrubs over *Triodia epactia* very open hummock grassland and/or mixed very open tussock grassland. | 817.3 | 4.4 (0.54%) | 0.8 (0.10%) |
| **P4** | *Corymbia pachycarpa, Eucalyptus brevifolia* low open woodland over *Acacia calligera, A. lysiphloia* tall open shrubland over *Triodia epactia, T. intermedia* open hummock grassland. | 131.8 | 4.3 (3.26%) | 0.9 (0.68%) |
| **P5** | *Corymbia opaca, Eucalyptus brevifolia* scattered low trees over *Triodia intermedia* open hummock grassland | 1146.1 | 8.4 (0.73%) | 3.1 (0.27%) |
| **P7** | *Eucalyptus brevifolia, Bauhinia cunninghamii* scattered low trees to low open woodland over *Dichrostachys spicata, Carissa lanceolata, *Vachellia farnesiana* tall open shrubland over *Triodia intermedia* very open hummock grassland and/or **Cenchrus* spp., *Chrysopogon fallax* open tussock grassland | 515.5 | 18.9 (3.67%) | 2.4 (0.47%) |
| **P8** | *Acacia synchronicia, *Vachellia farnesiana, Carissa lanceolata* scattered shrubs to tall open shrubland over *Chrysopogon fallax, Dichanthium fecundum, *Cenchrus* spp. open tussock grassland | 466.4 | 1.8 (0.39%) | 1.1 (0.24%) |
| **P10** | *Eriachne festucacea, Dichanthium fecundum* tussock grassland | 227.3 | 0.6 (0.26%) | 0 (0%) |

| Type | Description (Biota 2021a) | Extent within Survey Area (ha) | Extent in Development Envelope (ha) (% of Surveyed Area) | Estimated Impact (ha) (% of Surveyed Area) |
|---|---|---|---|---|
| **Drainage Lines** | | | | |
| **D3** | *Eucalyptus camaldulensis* open woodland | 102.7 | 0.1 (0.10%) | 0.1 (0.10%) |
| **D4** | *Eucalyptus camaldulensis, E. limitaris* open woodland | 47.1 | 0.4 (0.85%) | 0 (0%) |
| **D5** | *Eucalyptus limitaris, Terminalia volucris* low open woodland | 261.2 | 0.6 (0.23%) | 0.3 (0.11%) |
| **Disturbed** | | 97 | 2.7 (2.78%) | 1.6 (1.65%) |
| **Cleared** | | 148.4 | 26.5 (17.85%) | 21.9 (14.76%) |
| **TOTAL (excluding 'Cleared' areas)** | | | | **22.0 ha** |

Tables 3 and 4 provide details of the Pre-European Vegetation Associations with the project area and the remaining extents of these associations.

**Table 3. Summary of Project Area's Mapped Pre-European Vegetation Associations**

| Pre-European Vegetation Association(s) | Clearing Description | % Vegetation Condition in Impact Area (Biota 2021a) | | Comments |
|---|---|---|---|---|
| **Vegetation Association 831** described as Hummock grasslands, sparse tree steppe; snappy gum over hard spinifex *Triodia intermedia* & *T. inutilis* (Government of Western Australia, 2019) | Clearing of up to 3.16 ha for pre-construction activities for Tanami Road Upgrade Project Stage 1 on Tanami Rd in the Shire of Halls Creek. | Excellent | 6.8% | Vegetation description and condition determined from report - "Biota Environmental Sciences, (2021). Tanami Road Upgrade SLK 0-60 Biological Survey. Prepared for Main Roads Western Australia, May 2021." |
| | | Very Good to Excellent | 0.0% | |
| | | Very Good | 12.8% | |
| | | Good to Very Good | 16.4% | |
| | | Good | 12.4% | |
| | | Poor to Good | 1.0% | |
| | | Poor | 2.5% | |
| | | Degraded | 0.0% | |
| | | Completely Degraded | 0.7% | |
| | | Cleared | 47.5% | |
| **Vegetation Association 837** described as a Grasslands, short bunch grass savanna low tree; snappy gum over arid short grass on plains (Government of Western Australia, 2019) | Clearing of up to 4.33 ha for pre-construction activities for Tanami Road Upgrade Project Stage 1 on Tanami Rd in the Shire of Halls Creek. | Excellent | 0.0% | |
| | | Very Good to Excellent | 0.0% | |
| | | Very Good | 0.3% | |
| | | Good to Very Good | 0.0% | |
| | | Good | 0.0% | |
| | | Poor to Good | 0.0% | |
| | | Poor | 17.2% | |
| | | Degraded | 10.4% | |
| | | Completely Degraded | 10.6% | |
| | | Cleared | 61.5% | |
| **Vegetation Association 847** described as a Hummock grasslands, sparse tree steppe; snappy gum & bloodwood *(Eucalyptus terminalis)* over soft | Clearing of up to 0.313 ha for pre-construction activities for Tanami Road Upgrade Project Stage 1 on Tanami Rd | Excellent | 0.0% | |
| | | Very Good to Excellent | 0.0% | |
| | | Very Good | 0.0% | |
| | | Good to Very Good | 0.0% | |

**Table 3. Summary of Project Area's Mapped Pre-European Vegetation Associations**

| | | | | |
|---|---|---|---|---|
| spinifex (Government of Western Australia, 2019) | in the Shire of Halls Creek. | Good<br>Poor to Good<br>Poor<br>Degraded<br>Completely Degraded<br>Cleared | 0.0%<br>0.0%<br>0.0%<br>12.4%<br>0.2%<br>87.6% | |
| **Vegetation Association 849** described as a Hummock grasslands, low tree steppe; snappy gum & bloodwood over soft spinifex (Government of Western Australia, 2019) | Clearing of up to 0.782 ha for pre-construction activities for Tanami Road Upgrade Project Stage 1 on Tanami Rd in the Shire of Halls Creek. | Excellent<br>Very Good to Excellent<br>Very Good<br>Good to Very Good<br>Good<br>Poor to Good<br>Poor<br>Degraded<br>Completely Degraded<br>Cleared | 0.0%<br>0.0%<br>0.0%<br>0.0%<br>0.0%<br>0.0%<br>12.6%<br>16.9%<br>0.7%<br>69.7% | |
| **Vegetation Association 851** described as a Hummock grasslands, sparse tree steppe; snappy gum & bloodwood (*E. terminalis*) over hard spinifex, */* & *T. intermedia* on basalt and dolerite (Government of Western Australia, 2019) | Clearing of up to 12.95 ha for pre-construction activities for Tanami Road Upgrade Project Stage 1 on Tanami Rd in the Shire of Halls Creek. | Excellent<br>Very Good to Excellent<br>Very Good<br>Good to Very Good<br>Good<br>Poor to Good<br>Poor<br>Degraded<br>Completely Degraded<br>Cleared | 50.4%<br>0.0%<br>7.5%<br>3.5%<br>0.4%<br>0.0%<br>0.1%<br>1.1%<br>0.3%<br>36.8% | |
| **Vegetation Association 871** described as a Mosaic: Grasslands, curly spinifex, low tree savanna; snappy gum over curly spinifex / Hummock grasslands, grass steppe; hard spinifex, *Triodia intermedia* (Government of Western Australia, 2019) | Clearing of up to 1.344 ha for pre-construction activities for Tanami Road Upgrade Project Stage 1 on Tanami Rd in the Shire of Halls Creek. | Excellent<br>Very Good to Excellent<br>Very Good<br>Good to Very Good<br>Good<br>Poor to Good<br>Poor<br>Degraded<br>Completely Degraded<br>Cleared | 0.0%<br>0.0%<br>17.3%<br>0.0%<br>3.5%<br>0.0%<br>0.0%<br>0.0%<br>5.8%<br>73.5% | |

**Table 4. Pre-European Vegetation Representation**

| Pre-European Vegetation Association | Scale | Pre–European (ha) | Current Extent (ha) | % Remaining | % Remaining in DBCA reserves |
|---|---|---|---|---|---|
| **Veg Assoc No. 831** | **Statewide** | 381,764.51 | 381,594.39 | 99.96 | 8.42 |
| | **IBRA Bioregion** *Ord Victoria Plain* | 380,910.53 | 380,744.09 | 99.96 | 8.44 |
| | **IBRA Sub-region** *Purnululu* | 379,001.70 | 378,835.26 | 99.96 | 8.48 |
| | **Local Government Authority** *Shire of Halls Creek* | 381,764.51 | 381,594.39 | 99.96 | 8.42 |
| **Veg Assoc No. 837** | **Statewide** | 172,815.95 | 172,553.02 | 99.85 | - |
| | **IBRA Bioregion** *Ord Victoria Plain* | 21,278.56 | 21,278.56 | 100.00 | - |
| | **IBRA Sub-region** *South Kimberley Interzone* | 21,182.37 | 21,182.37 | 100.00 | - |
| | **Local Government Authority** *Shire of Halls Creek* | 151,971.74 | 151,708.81 | 99.83 | - |
| **Veg Assoc No. 847** | **Statewide** | 71,106.64 | 71,106.64 | 100.00 | 60.55 |
| | **IBRA Bioregion** *Ord Victoria Plain* | 71,106.64 | 71,106.64 | 100.00 | 60.55 |
| | **IBRA Sub-region** *South Kimberley Interzone* | 4,632.67 | 4,632.67 | 100.00 | 0.19 |
| | **Local Government Authority** *Shire of Halls Creek* | 71,106.64 | 71,106.64 | 100.00 | 60.55 |
| **Veg Assoc No. 849** | **Statewide** | 481,753.04 | 481,753.04 | 100.00 | 4.05 |
| | **IBRA Bioregion** *Ord Victoria Plain* | 459,303.88 | 459,303.88 | 100.00 | 4.25 |
| | **IBRA Sub-region** *South Kimberley Interzone* | 459,169.85 | 459,169.85 | 100.00 | 4.24 |
| | **Local Government Authority** *Shire of Halls Creek* | 481,753.04 | 481,753.04 | 100.00 | 4.05 |
| **Veg Assoc No. 851** | **Statewide** | 111,037.36 | 110,983.69 | 99.95 | 0.05 |
| | **IBRA Bioregion** *Ord Victoria Plain* | 110,998.40 | 110,944.72 | 99.95 | 0.05 |
| | **IBRA Sub-region** *Purnululu* | 110,984.56 | 110,930.89 | 99.95 | 0.05 |
| | **Local Government Authority** *Shire of Halls Creek* | 111,037.36 | 110,983.69 | 99.95 | 0.05 |
| **Veg Assoc No. 871** | **Statewide** | 230,547.71 | 230,264.07 | 99.88 | - |
| | **IBRA Bioregion** *Central Kimberley* | 230,415.48 | 230,131.84 | 99.88 | - |
| | **IBRA Sub-region** *Hart* | 230,415.48 | 230,131.84 | 99.88 | |
| | **Local Government Authority** *Shire of Halls Creek* | 230,547.71 | 230,264.07 | 99.88 | - |

### 4.1.2 Surveyed Vegetation Condition

The breakdown of vegetation conditions within the areas surveyed by Biota (2021a), along with the condition of vegetation in the Development Envelope and Layout (estimated impact) is provided in Table 5.

**Table 5. Vegetation Types Representation within the Project Development Envelope (Biota, 2021)**

| Condition | Description (Trudgen 1988) | Extent within Survey Area (ha) | Extent in Development Envelope (ha) (% of Surveyed Area) | Estimated Impact (ha) (% of Surveyed Area) |
|---|---|---|---|---|
| **Excellent** | Pristine or nearly so, no obvious signs of damage caused by human activities since European settlement. | 2411 | 17.4 (0.72%) | 10 (0.42%) |
| **Very Good to Excellent** | Intermediate condition | 61.5 | 0 (0%) | 0 (0%) |
| **Very Good** | Some relatively slight signs of damage caused by human activities since European settlement. For example, some signs of damage to tree trunks caused by repeated fire, the presence of some relatively non-aggressive weeds, or occasional vehicle tracks. | 1646.4 | 6.9 (0.42%) | 3.1 (0.19%) |
| **Good to Very Good** | Intermediate condition | 942.8 | 3.7 (0.39%) | 1.7 (0.18%) |
| **Good** | More obvious signs of damage caused by human activity since European settlement, including some obvious impact on the vegetation structure such as that caused by low levels of grazing or slightly aggressive weeds. | 473.8 | 3.9 (0.82%) | 1 (0.21%) |
| **Poor to Good** | Intermediate condition | 33.8 | 0.4 (1.18%) | 0.1 (0.30%) |
| **Poor** | Still retains basic vegetation structure or ability to regenerate it after very obvious impacts of human activities since European settlement, such as grazing, partial clearing, frequent fires or aggressive weeds | 1018 | 15.5 (1.52%) | 2.1 (0.21%) |
| **Degraded** | Severely impacted by grazing, very frequent fires, clearing or a combination of these activities. Scope for some regeneration but not to a state approaching good condition without intensive management. Usually with a number of weed species present including very aggressive species. | 633.3 | 9.6 (1.52%) | 1.7 (0.27%) |
| **Completely Degraded** | Areas that are completely or almost completely without native species in the structure of their vegetation; i.e. areas that are cleared or 'parkland cleared' with their flora comprising weed or crop species with isolated native trees or shrubs. | 233 | 3.7 (1.59%) | 2.3 (0.99%) |
| **Cleared** | Areas devoid of native vegetation | 148.4 | 26.5 (17.79%) | 21.9 (14.76%) |

### 4.1.3 Priority Flora & Species of Interest

Table 6 presents the total counts and population estimates collected from the various surveys completed (Biota 2021a; Biota 2021b; 360 Environmental 2022)

**Table 6. Priority Flora and Species of Interest**

| Taxon | Abundance in Survey Area | Abundance in Development Envelope (% of Surveyed Population) | Estimated impact (% of Surveyed Population) |
|---|---|---|---|
| **Priority 1** | | | |
| *Goodenia lunata* | 19,210 | 1,736 (9.04%) | 437 (2.3%) |
| *Pentalepis trichodesmoides* subsp. *incana* | 28 | 0 | 0 |
| **Priority 2** | | | |
| *Ipomoea racemigera* | 150 | 0 | 0 |
| *Kohautia australiensis* | 2 | 0 | 0 |
| **Priority 3** | | | |
| *Glycine falcata* | 384 | 0 | 0 |
| *Goodenia crenata* | 44,186 | 86 (0.19%) | 60 (0.14%) |
| *Trachymene dusenii* | 5,444 | 45 (0.82%) | 45 (0.82%) |
| **Species of Interest** | | | |
| *Aristida* aff. *jerichoensis* | 25 | 0 | 0 |
| *Convolvulaceae* sp. (TAN02-49) | 1 | 0 | 0 |
| *Cullen* sp. (TAN-TW07) | 2,684 | 2 (0.08%) | 2 (0.08%) |
| *Cyperus* sp. (TAN14-14) | 64 | 0 | 0 |
| *Euphorbia ferdinandi* var. ? *appendiculata* | 25 | 0 | 0 |
| *Euphorbia schultzii* var. *comans* | 1 | 0 | 0 |
| *Euphorbia* sp. (TAN11-06) | 46 | 0 | 0 |
| *Goodenia* aff. *crenata* | 635 | 0 | 0 |
| *Pittosporum* aff. *angustifolium* | 5 | 0 | 0 |
| *Portulaca* ? sp. finely echinate (D.G.Tulloch 41) | 43 | 0 | 0 |
| *Sida* sp. (TAN01-17) | 69 | 0 | 0 |
| *Triodia* sp. (TAN07-02/34) | 15,024 | 0 | 0 |

### 4.1.4 Fauna Habitats

Table 7 presents fauna habitats recorded by Biota (2021a) along with the estimated proportions within the Development Envelope and indicative layout (estimated impact).

**Table 7. Fauna Habitats**

| Type | Fauna Habitat Description (Biota 2021a) | Extent within Survey Area (ha) | Extent in Development Envelope (ha) (% of Surveyed Area) | Estimated Impact (ha) (% of Surveyed Area) |
|---|---|---|---|---|
| **Hills** | | | | |
| **LSH** | Low rolling stony hills - Dominant habitat of the contextual area, occurring on hills with rocky and stony substrates. Open *Eucalyptus brevifolia* and *Corymbia opaca* woodland over hummock grasslands dominated by *Triodia intermedia* and/or *T. wiseana*. | 2942 | 17.9 (0.61%) | 11.6 (0.39%) |
| **RBS** | Ridgeline breakaways and scree slopes - Ironstone and granite ridgeline formations supporting overhangs, caves and rocky boulders. Scattered *Eucalyptus brevifolia* trees over mixed open hummock grasslands often dominated by *Triodia intermedia*. | 124.6 | 0.4 (0.32%) | 0 |
| **Plains** | | | | |
| **AMS** | *Acacia monticola* tall open scrub sandplain - *Acacia monticola* tall open scrub over scattered tussock grasses and herbs on sandplain. | 0.5 | 0 | 0 |
| **CCP** | Cracking clay plains - Heavy clay and stony substrates on basalt, supporting *Eriachne festucacea* and *Dichanthium fecundum* open tussock grasslands. | 164.4 | 0 | 0 |
| **LOD** | Low open degraded plain - *Corymbia opaca, Eucalyptus brevifolia* scattered low trees over heavily degraded open hummock grassland and/or tussock grassland. | 867.7 | 10 (1.15%) | 2.7 (0.31%) |
| **OGP** | Open shrubland/woodland on tussock grass plains - *Corymbia opaca, Bauhinia cunninghamii, Atalaya hemiglauca* scattered low trees to low open woodland over *Dichrostachys spicata, Carissa lanceolata* scattered tall shrubs over *Triodia epactia* very open | 375.5 | 11.3 (3.01%) | 0.9 (0.24%) |
| **OSP** | Open shrubland/woodland on spinifex plains - Open *Eucalyptus brevifolia, Corymbia opaca* low open woodland over *Triodia intermedia* spinifex hummock grasslands, over stony substrate on broad undulating plains; occasionally supporting termite mounds. | 2573.3 | 17.6 (0.68%) | 4.9 (0.19%) |
| **Riverine** | | | | |
| **MDL** | Major drainage lines and associated tributaries - Open *Eucalyptus camaldulensis* and *Terminalia platyphylla* woodland near ephemeral drainage lines. | 308.6 | 1 (0.32%) | 0.3 (0.10%) |
| **MMD** | Man-made dam surrounded by introduced *Eucalyptus* sp. | 4 | 0 | 0 |
| **Cleared** | | 241.4 | 29.2 (12.09%) | 23.4 (9.69%) |

# 5 ASSESSMENT AGAINST THE TEN CLEARING PRINCIPLES

In assessing whether the project's proposed clearing is likely to have a significant impact on the environment, the project was assessed against the ten Clearing Principles (Environmental Protection Act 1986, Schedule 5).

Each principle has been assessed in accordance with DWER's 'A Guide to the Assessment of Applications to Clear Native Vegetation' and other relevant CPS Decision Reports prepared by DWER.

The proposed clearing is at variance with one of the 10 Clearing Principles.

**(a) Native vegetation should not be cleared if it comprises a high level of biological diversity.**

**Proposed clearing is unlikely to be at variance to this Principle**

Current guidance on the assessment of biological diversity, described in DER 2014, identifies the following metrics as indicators of high diversity:

1. Biodiversity hotspots
2. Flora and Fauna species diversity
3. Priority and other Significant Flora
4. Priority Fauna
5. Ecological Community Diversity
6. Significant Ecological Communities
7. Vegetation Condition

**Biodiversity Hotspots**

The proposed clearing is not located in a Biodiversity Hotspot (DER 2014).

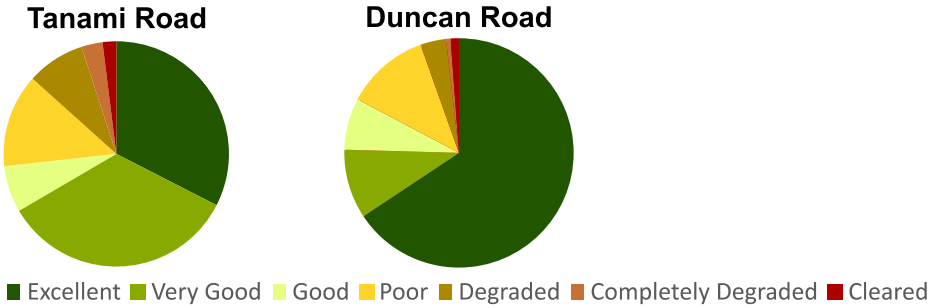
**Species Diversity**

A total of 441 species of vascular flora and 114 species of vertebrate fauna were recorded during biological surveys (Biota 2021a; 360 Environmental 2022). Biota (2021a) notes that this represents a large proportion of species recorded from the surrounding IBRA subregions, but also notes that this is likely due to a number of factors:

- The linear nature of the survey area, running perpendicular to local landforms (i.e. a range of habitats are intersected);
- The length of the corridor crossing a broad geographic range; and
- Very high rainfall received prior to the survey resulting in optimal collecting conditions.

Biota also notes that the Tanami Rd survey area comprises a higher level of diversity in comparison to available surveys from the surrounding areas, with the exception of the Duncan Road Upgrade Survey, 20km to the east (Biota 2021c). The only other known surveys were:

- Elvire to Sandy Creek section of the Great Northern Highway, surveyed by GHD in 2007 (an outdated survey); and
- Browns Range Mineral Sands Mine, surveyed by MWH in 2014 (a non-linear survey area focused on a smaller set of landforms [two land systems comprised of six landform units] in the Tanami Desert [MWH 2014]). In comparison, the Tanami Rd Development Envelope intersects four land systems comprised of 17 landform units (Payne and Schoknecht 2011). Despite the Development Envelope containing almost three times as many landform types, the total vascular taxa was only 12.5% higher than the number recorded by MWH (2014).




*A breakdown of the vegetation conditions recorded during the two adjacent surveys – There is significantly more vegetation in Excellent condition on the Duncan Road, which partially accounts for the higher diversity in comparison to the Tanami Road.*

Considering the factors outlined above, the general Tanami Road area is considered to be relatively high in biological diversity, but not as high as other areas such as the Duncan Road (where the condition of vegetation was notably better than the Tanami Rd in many areas [Biota 2021c]).

It is likely that species diversity within the areas to be cleared is overall lower than that of surrounding areas because:

- All areas of clearing are in close proximity to an existing major road, which are likely to experience edge effects (as noted in weed data collected by [Biota 2021a])
- There are areas of higher biological diversity in the surrounding areas, notably in the vicinity of the Duncan Road (Biota 2021c).

Furthermore, the current extent of pre-European vegetation associations within the project development envelope is close to 100% at all scales (State IBRA Bioregion, IBRA Subregion, LGA). As such, given the remoteness of the local area (the Tanami Road and attached cattle station infrastructure are the only developments in the local area), it is likely that species diversity is as high if not higher in areas beyond the Development Envelope.

**Priority and other Significant Flora**

No known records of Threatened flora taxa were identified from the project study area, and no Threatened flora were recorded during the biological survey by Biota (2021a) and the subsequent follow up targeted flora survey by 360 Environmental (2022) and Biota (2021b) from the broader survey area.

Seven priority flora taxa and 12 species of interest were recorded during biological surveys (Biota 2021a; 2021b; 360 Environmental 2022; Table 6). Of these, the Development Envelope contains three priority flora taxa and one species of interest:

- *Goodenia lunata* (P1)
- Goodenia crenata (P3)
- Trachymene dusenii (P3)
- Cullen sp. (TAN 14-14) (Species of Interest)

The number of priority flora that are affected by the clearing is significantly less than what is present in the local area i.e. the proposed clearing will result in clearing of 2.3 % of Goodenia lunata recorded locally during biological surveys and <1% of individuals recorded for the other 2 priority species and the species of interest.,. It should also be noted that this section of the Tanami Road is poorly surveyed (the surveys carried out for this Project are the only known surveys along this section of the Tanami Road). Given the habitats in which the majority of priority flora were recorded were relatively common and considered likely to extend beyond the survey area, it is likely that the local populations of priority flora are larger than recorded.

*Goodenia lunata* (P1)

Approximately 437 individuals of *Goodenia lunata* will be required to be cleared for project activities. Given that 19,210 individuals were recorded from the survey area, this represents the clearing of 2.3% of the recorded populations of the species.'

The species has a very broad distribution from the eastern Kimberley to Victoria. In WA, they have been re from the Ord Victoria Plain, Central Kimberley and Great Sandy Desert bioregions. The species was common in the survey area ranging in abundance from 10 to 300 individuals at each location. The species was found within 8 of the 13 recorded vegetation units within the surveyed area (predominantly P8, to a lesser extent P7, P10 and occasionally D3, D4 and D5; Biota 202b). They were primarily found growing adjacent to roads and tracks, in the areas where there is already some disturbance. Vegetation unit P8 (in which the majority of individuals of the species were recorded) occupies 466.4 ha within the survey area alone, of which 1.1 ha is expected to be cleared (a loss of approximately 0.24% within the local area).

It should also be noted that a large proportion of the population recorded in the Biota (2021a and 2021b) surveys occur within previously disturbed areas (the existing road verge and drains of the Tanami Road, which are periodically graded and maintained by the Shire of Halls Creek). The species is likely to be resilient to disturbance and will likely continue to persist following the clearing proposed by this project. The focus on minimising clearing impacts by designing the potential upgrade works on the existing road alignment has led to a relatively higher level of impact to this species (the highest impact of the four taxa of concern). The ecology of *Goodenia* spp. shows that many are 'disturbance specialists' (Sage and Pigott 2003) and often occur at higher densities in disturbed areas.

*An example of G. lunata growing on the existing road formation, intersected by the Development Envelope and indicative clearing footprint.*

As Main Roads proposes to clear 2.3% of the recorded population, 0.24% of the main vegetation unit in which the species was found, and the fact that the species appears tolerant of disturbance that is likely to persist following clearing, significant impact to the species as a result of the clearing is considered unlikely.

<u>*Goodenia crenata*</u> (P3)

Approximately 60 individuals of *Goodenia crenata* (P3) are proposed to be cleared for pre-construction activities. 44,186 individuals were recorded from the survey area. This represents the clearing of 0.14% of the recorded populations of the species from the survey area. The species are known from Central Kimberley, Ord Victoria Plains and Tanami bioregions. They were also common in the survey area, ranging in abundance from 1 to 480 individuals at each location and were often found on road verges and in previously disturbed areas.

*[Redacted] - Map*

Biota suggests that 9 of the 13 recorded vegetation types supports this species (predominantly P2, P3, P5, P7 and P8, with scaterred records in D4, D5, H1 and H2) indicating that the total potential habitat is approximately 3,508 ha in the local area (Biota 2021b). Of this, an estimated 7.5 ha (0.21%) of potential habitat will be cleared.

Given the small scale clearing of 0.14% of the recorded population and 0.21% of potential habitat, and the species is tolerant of disturbance and likely to persist following the works, a significant impact to the species as a result of the clearing activities is considered unlikely.

*Trachymene dusenii* (P3)

Approximately 45 individuals of *Trachymene dusenii* (P3) are proposed to be cleared of 5,444 individuals recorded from the survey area. This represents the clearing of 0.82% of the recorded population from the survey area. *Trachymene dusenii* has a broad distribution occurring from northern Kimberley through to southwest Northern Territory. The species was also common in the survey area with abundance at each location ranging from 1 to 108 individuals.

The majority of records were associated with vegetation types H1 and H2, and to a lesser extent P5, suggesting a potential habitat extent of 2,997 ha within the survey area (Biota 2021b). Only 11.59 ha out this potential habitat is proposed to be cleared (0.38%).

Given the relatively small number of individuals to be cleared, the size of the population (outside of the areas to be cleared) and the extent of suitable habitat for the species, significant impacts to *Trachymene dusenii* as a result of clearing activities are considered unlikely.

*Cullen* sp. (TAN-TW07)

Only 2 individuals of *Cullen* sp. (TAN-TW07) are proposed to be cleared out of 2,682 individuals that occur within the survey area which is less than 0.08% of the recorded populations form the survey area. This is considered unlikely to cause any appreciable impact to the species.

Other species

*Eucalyptus ordiana* (P2) is a mallee with an average height ranging from 2.5 – 5m. All records except one for this species are from the Kununurra area where it is described as growing in skeletal soils over sandstone or quartzite and on steep rocky outcrops (Dunlop and Done 1992). A single record of this species was detected in 2017, 32km west of the project where it was described as growing in a minor creek with light reddish brown sand over granite (ALA 2022). This indicates a broad habitat preference that encompasses most of the habitats in the East Kimberley. However, three flora surveys over two years within the Development Envelope failed to detect this species, despite surveys occurring at the correct flowering period and the fact that the species is large and detectable throughout the year. It is therefore considered as unlikely to occur.

The project will operate under Main Roads standard environment management plan and include a commitment to flag and demarcate the project layout to minimise and avoid the impacts to the priority species Change in the proposed layout will be a hold point in the environment management plan signed off by an EO on the condition that no additional priority species are impacted.

**Priority Fauna**

No fauna species of conservation significance were recorded during biological surveys undertaken for the project. However, some old disused burrows and diggings signs possibly attributable to Bilby *Macrotis lagotis* (VU) was recorded from a small patch of habitat type – "*Acacia monticola* tall open scrub over scattered tussock grasses and herbs on sandplain" from outside the project development envelope (AMS habitat type; Table 7). No recent diagnostic evidence (e.g., tracks or scats) attributable to Bilby was found in the area. The majority of the project envelope is characterised by relatively hard and stony substrates which has low prospectivity for Bilby. Given the lack of recent evidence of occurrence of Bilby, the potential habitat identified being outside of the development envelope and the low prospectivity of habitat (for Bilby) within the development envelope, impacts to the species as a result of the project clearing is therefore unlikely.

A likelihood of occurrence assessment of all significant species identified in the desktop assessment was undertaken by Biota (2021a) based on availability of suitable habitat and previous known records in the study area. The assessment indicated that 8 significant species were considered likely to occur and 17 species may occur within the survey area. Despite these species being specifically targeted during the fauna component of the survey, none were recorded. However, as the project area is within the mapped distribution of the species, the Development Envelope is considered to contain suitable foraging habitat for Short-tailed Mouse, Ghost Bat, Yellow-lipped Cave Bat, Grey Falcon, Gouldian Finch, Peregrine Falcon, Australian Painted Snipe and Gravel Dragon but lacks the core roosting and breeding habitat. More details of the fauna species that are assessed as likely or may occur within the project development envelope is described in Principle (b). It is worth noting that all the species listed above have broad distributions across inland or northern Australia, making large areas of habitats in the East Kimberley potential foraging habitat (See Principle B; DoE 2018).

The marine and migratory birds identified in the desktop assessment are mostly non-breeding migrants to Australia and breed in the northern hemisphere. These species have a wide range of occurrence across Australia and the extent of suitable habitat within the project envelope is very limited.

**Ecological Community Diversity**

Of the 13 ecological communities (vegetation units) recorded during biological surveys, the proposed clearing will affect 10 communities (Table 2). The Tanami Rd is a linear infrastructure corridor running approximately north to south, perpendicular to the landforms in the area and therefore intersects numerous vegetation units. As stated above the impacts to vegetation units will occur along and adjacent to the existing cleared road. In addition, all of the vegetation units (included in the proposed clearing area) were well represented in the survey area. Clearing in each of the vegetation units (to be impacted) is <1% of the total mapped extent in the survey area.

**Significant Ecological Communities**

No Environmentally Sensitive Areas (ESAs) and Threatened Ecological Communities (TECs) were identified in the 40km radius desktop database searches nor recorded during the field survey by Biota (2021a).

The desktop assessment identified four Priority Ecological Communities (PECs) from the project Study Area:

- **P1 - Vegetation Association 872 as defined by John Beard's vegetation mapping for the Kimberley (Beard 1979):** Described as **"**Hummock grasslands, sparse tree steppe; snappy gum over hard spinifex *Triodia wiseana* and *T. intermedia* on basalt and dolerite" (DBCA 2020).
- **P3 - Vegetation Association 850 as defined by John Beard's vegetation mapping for the Kimberley (Beard 1979):** Described as "Grasslands, tall bunch grass savanna, mitchell & blue grass" (DBCA, 2021)
- **P3 - Vegetation Association 834 as defined by John Beard's vegetation mapping for the Kimberley (Beard 1979):** Described as "Grasslands, tall bunch grass savanna, mitchell & blue grass" (DBCA, 2021)
- **P3 - Gordon land system:** Described as "Low hilly to undulating limestone country on inland and coastal erosional plains" (DBCA 2021).

None of the vegetation communities recorded during the Biological Survey carried out by Biota, (2021a) represents TECs or PECs. One Tussock Grassland vegetation units recorded during the field survey has been described to share some similarities with P3 PECs - Vegetation Associations 850 and 834:

- **P10 -** *Eriachne festucacea, Dichanthium fecundum* tussock grassland

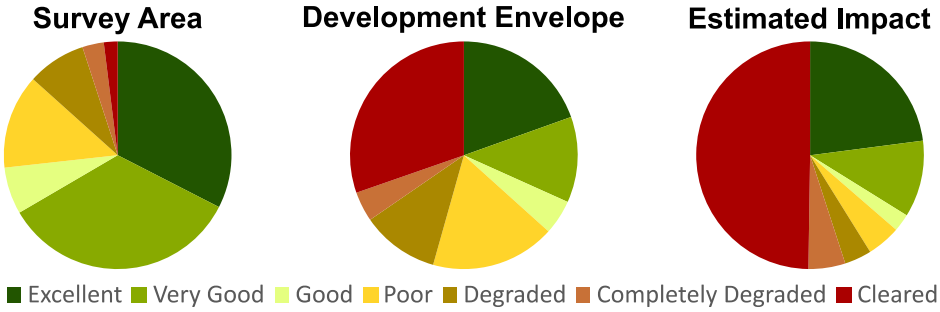
The vegetation unit P10 comprises tussock grassland dominated by *Eriachne festucacea* (Plains Wandarrie Grass) and *Dichanthium fecundum* (Bluegrass) and was considered to be of local significance. No vegetation comprised of P10 is proposed to be cleared, although 0.6 ha exists within the Development Envelope. 0.6 ha amounts to 0.26% of the mapped extent of the vegetation unit, making significant impact to the P10 community unlikely.

**Fauna Habitat Diversity**

Biota (2021a) identified nine fauna habitats during the biological survey, of which only five will require any clearing (Table 7). The amount of clearing required is highest for the LSH (low rolling stony hills) habitat, at a total of 11.6 ha, or 0.39% of the extent mapped in the local area. All of the fauna habitats to be impacted are well represented outside of the development envelope and proposed clearing impacts are <1% for each of the clearing habitats. The proposed clearing is therefore considered unlikely to have a significant impact on local fauna habitat diversity.

**Vegetation Condition**

The proposed clearing has been designed to make use of existing cleared areas where possible (by designing over the current Tanami Rd alignment). The charts below show the proportions of vegetation conditions that will be impacted, in comparison with that of the local area (survey area) as recorded by Biota (2021a).




**intermediate vegetation conditions assigned to the better condition to reduce number of categories for comparison purposes.*

that the proposal has been designed to utilise existing cleared areas where possible and proposed clearing area contains proportion less vegetation in excellent and very good condition than the broader survey area. The clearing proposed is likely to have an overall lower comparable diversity, than that of areas in the local surrounds (using vegetation condition as a diversity indicator).

Furthermore, there are significant areas of vegetation in better condition than the areas requiring clearing. For example, while a total of 15.9 ha of vegetation in good or better condition requires clearing, there is a total of 5,535.5 ha of comparable vegetation in the survey area.

**Summary**

The proposed clearing is considered not likely to be at variance with this principle for the following reasons:

- Conservation Significant Flora: proposed clearing of individuals of priority flora will result in loss of 2.3% of local populations (recorded during biological survey) for *Goodenia lunata* (P1) and <1% for *Goodenia crenata* (P3) and *Trachymene dusenii* (P3). Local populations of priority flora are likely to be larger than recorded during surveys as the species have relatively wide known distributions and the vegetation units they were recorded in were common (within the survey area) and considered likely to extend beyond survey boundaries.
- Other significant species: Clearing of individuals of one species of interest (*Cullen* sp. (TAN-TW07) for the project will result in loss of less than 2 % of the local population recorded during biological surveys.
- Conservation Significant Fauna: No conservation significant fauna were recorded from the broader survey area. The fauna habitats within the project development envelope do not represent core habitat for any of the conservation significant fauna species.
- Priority Ecological Communities: No TECs or PECs will be impacted as a result of project activities. Less than 0.45 ha of riparian vegetation (D3, D4 and D5) is proposed to be cleared.
- Vegetation Condition: Vegetation types within the project envelope are well represented locally and regionally with the floristic biodiversity within the proposed clearing area likely to be represented in the areas surrounding the project. The project was designed to utilise existing disturbed areas where

possible. As such, the proportion of vegetation in Poor or lesser condition is higher than that of the surrounding areas.

Based on the above, the project is not likely to be at variance to this Principle.

**Methodology**

ALA 2022
360 Environmental, (2022)
Biota, (2021a)
Biota, (2021b)
Biota (2021c)
DBCA, (2021)
DBCA shapefiles
DER 2014
EPBC Act Protected Matters Search Report 09/08/2022
Florabase WA Government of WA (2019)
Main Roads GIS Shapefiles
MWH 2014
Schoknecht and Payne 2011

## (b) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.

**Proposed clearing is not likely to be at variance to this Principle**

Only six fauna habitat types (and approximately 1.57 ha of regrowth) will be impacted by the proposed clearing (Table 7).

As evident from Table 7, the mapped fauna habitats are widespread throughout the larger survey area and the proposed clearing represents only a small fraction of current extent of the each of these habitats. The maximum clearing required is to the LSH habitat type (Low rolling stony hills), of 11.6 ha (0.39% of the mapped extent in the survey area).

No fauna species of conservation significance were recorded during the field survey. A disused burrow system possibly attributable to the Bilby, *Macrotis lagotis* (VU) was recorded from the broader survey area in a fauna habitat (*Acacia monticola* tall open scrub over scattered tussock grasses and herbs on sandplain) which does not occur within the development envelope. This habitat type consisted of deep red sand suitable for burrowing with stands of *Acacia monticola* which is known to host larval prey, a habitat type known to be associated with the presence of bilbies. The extent of this habitat was small, confined to the single 0.5 ha patch in the survey area. Within this of habitat, a cluster of burrowing and digging signs was recorded but were all old and clearly disused. No other evidence (tracks or scats) of Bilby were found in the area. This habitat does not occur within the project development envelope and will not be impacted by the project activities. The majority of the survey area is characterised by relatively hard and stony substrates which has low perspectivity for Bilby.

A likelihood of occurrence assessment of all significant species identified in the desktop assessment was undertaken by Biota (2021a) based on availability of suitable habitat and previous known records in the study area. These species were also surveyed for in the field. The assessment indicated that 8 significant species were considered likely to occur and 17 species may occur within the survey area:

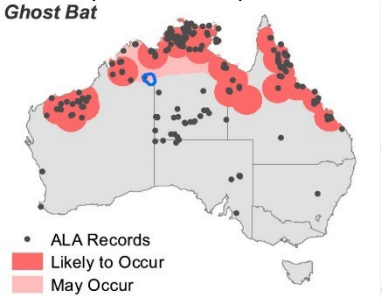
**Likely to occur**

| | |
|---|---|
| *Macroderma gigas* | Ghost Bat (VU) |
| *Falco hypoleucos* | Grey Falcon (VU) |
| *Cryptagama aurita* | Gravel Dragon (P1) |
| *Vespadelus douglasorum* | Yellow-lipped Cave Bat (P2) |
| *Falco peregrinus* | Peregrine Falcon (OS) |
| *Apus pacificus* | Fork-tailed Swift (MI) |
| *Charadrius veredus* | Oriental Plover (MI) |
| *Glareola maldivarum* | Oriental Pratincole (MI) |

**May occur**

| | |
|---|---|
| *Macrotis lagotis* | Bilby (VU) |
| *Calidris ferruginea* | Curlew Sandpiper (MI) (CR) |
| *Rostratula australis* | Australian Painted Snipe (EN) |
| *Erythrura gouldiae* | Gouldian Finch (P4) (EN) |
| *Crocodylus johnstoni* | Freshwater Crocodile (OS) |
| *Leggadina lakedownensis* | Short-tailed Mouse (P4) |
| *Gelochelidon nilotica* | Gull-billed Tern (MI) |
| *Motacilla tschutschensis* | Eastern Yellow Wagtail (MI) |
| *Numenius minutus* | Little Curlew (MI) |
| *Limosa limosa* | Black-tailed Godwit (MI) |
| *Calidris acuminata* | Sharp-tailed Sandpiper (MI) |
| *Calidris ruficollis* | Red-necked Stint (MI) |
| *Calidris melanotos* | Pectoral Sandpiper (MI) |
| *Actitis hypoleucos* | Common Sandpiper (MI) |
| *Tringa stagnatilis* | Marsh Sandpiper (MI) |
| *Tringa glareola* | Wood Sandpiper (MI) |
| *Tringa nebularia* | Common Greenshank (MI) |

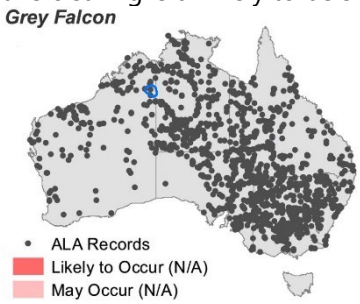
**Ghost Bat (VU)** There are two known records of the species within project 40km radius recorded in 1964. Ghost Bats are known to occur in a broad range of landforms, with distribution influenced by the availability of suitable caves for roost sites. They forage over large areas, with foraging ranges of over 60 ha. However, despite targeted searches, no Ghost Bats nor suitable roost caves for the species were detected during the biological survey despite targeted searches being undertaken. It is considered likely to forage within the project envelope particularly over Ridgeline Breakaways and Scree Slopes and Major Drainage Lines and Associated Tributaries. Only a small portion of these habitat types (0.5 ha out of 433.9 ha in the survey area) is proposed to be cleared while a major portion of these habitat types are outside the project clearing. As such impact to the species habitat as a result of this clearing is unlikely to be significant.




(DoEE 2018)

**Grey Falcon (VU)** There is one record of the species within 9km distance from the project location collected in 1979. Grey Falcon nests usually in the tallest trees along watercourses, particularly River Red Gum (*Eucalyptus camaldulensis*) and Coolibah (*E. coolabah*) (DAWE, 2021b). No Grey Falcon was detected during the biological survey. They are likely to utilise all the fauna habitats within the development envelope for foraging particularly Major Drainage Lines and Associated Tributaries. However, only a small portion of this habitat type (0.31 ha out of 308.7 ha in the survey area) is proposed to be cleared while a major portion of

suitable habitat types are outside the project clearing. As such impact to the species habitat as a result of this clearing is unlikely to be significant.

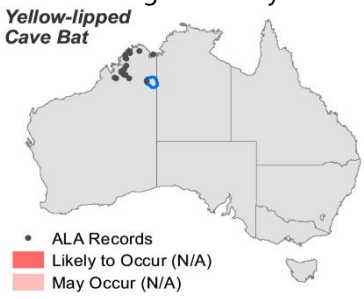



(DoEE 2018)

**Gravel Dragon (P1)** There are three historical records of the species approximately 16km from the project development envelope collected in 1979. The species is known to occur in the north-eastern interior of WA and in the adjacent Northern Territory. It is superbly adapted to mimic a gibber stone and has so far only been recorded from stony 'gibber' soils with spinifex. This species was not recorded during the biological survey, however there are areas of suitable spinifex habitat types - Open shrubland/woodland on spinifex plains within the development envelope that is suitable for the species. Only 4.9 ha out of 2573.3 ha of this habitat type from the survey area is proposed to be cleared. As such a large portion of the intact suitable habitat type is outside the development envelope. The impact as a result of the proposed small-scale clearing is unlikely to be significant.


(DoEE 2018)

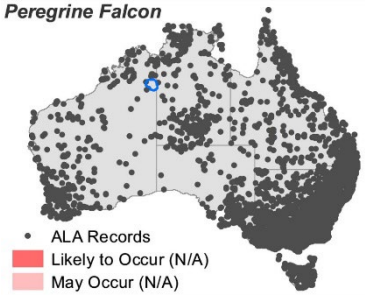
**Yellow-lipped Cave Bat (P2)** There are two historical records of the species collected in 1965 more than 26 km from the project location. They are restricted to the Kimberley region but are widespread within this range (Atlas of Living Australia, 2021) mostly associated with areas of rainfall greater than 800 mm per annum (Australian Museum, 2021). They utilise caves in both sandstone and limestone, typically near water. Typical habitats from which the species has been recorded include melaleuca and pandanus-lined waterways and adjacent open woodlands. This species was not detected during the analysis of the ultrasonic sound recorders deployed during the survey (Biota 2021a). No core roosting habitats (caves) occur within the survey area, however there is favourable foraging habitat in the form of Ridgeline Breakaways and Scree Slopes. Only 0.19 ha of this habitat type out of 125.2 ha from the survey area is proposed to be cleared. Since a large portion of the suitable habitat type is outside the development envelope and they may only utilise habitat within the development envelope as a foraging visitor, the impact as a result of the proposed small-scale clearing is unlikely to be significant.




(DoEE 2018)

**Peregrine Falcon (OS) –** Two known records within the project 40km radius. This species inhabits a wide range of habitats including forest, woodlands, wetlands and open country and nest in cliff faces, tree hollows and along rivers. They were not recorded during the survey and suitable cliffs for breeding do not occur but

habitats within the development envelope are likely to be used for foraging. Given the smalls scale clearing and available suitable habitat for the species is outside the development envelope, any impacts due to proposed clearing is unlikely.




(DoEE 2018)

The marine and migratory birds that are assessed as likely or may occur in the area are non-breeding migrants to Australia and breed in the northern hemisphere. Shorebirds forage primarily on muddy margins and shallow waters of wetlands and other inundated habitats, with some exhibiting preferences for saline or freshwater habitats. They may use freshwater habitats regularly and may use the margins of wetlands and other inundated habitats within the survey area on occasion. However, these species have a wide range of occurrence across Australia and the extent of suitable habitat within the project development envelope is very limited (DAWE 2022).

Two additional species identified in recent database searches, the Northern Brush-tail Possum and Great Desert Skink were both considered as unlikely to occur, detailed below.

The fauna species Northern brushtail possum (Kimberley) *Trichosurus vulpecula arnhemensis* (VU) has 2 known records within 15km from project development envelope. However, the species were not recorded in the field survey. The species is known to occur or shelter mainly in tall eucalypt open forests with large hollow-bearing trees, particularly where the understorey includes some shrubs that bear fleshy fruits (DAWE, 2021b). Though the project is within its distribution range, the project development envelope does not contain core habitat suitable for the species. Both records for this species are considered to be unreliable. One record is from 1931 from a skin held by Aboriginal People with general location notes and the other was identified through skin and skull without a collection date (collected by John Tunney suggesting this record is from 1901-1903; [Storr 1965]). As such this species is considered unlikely to occur.

Great Desert Skink *Liopholis kintorei* (VU)- Generally occurs on red sandplains and sand ridges (DAWE 2022). In the northern parts of the Tanami desert important habitat is palaeodrainage country vegetated with *Melaleuca glomerata* (white tea tree) and *Triodia pungens* (gummy spinifex). The principle food source for the great desert skink is the termite *Drepanotermes perniger* which has a naturally patchy distribution and burrow systems that appear to be constructed in close proximity to termite mounds (DAWE, 2021b). The project envelope does not contain suitable habitat for the species. Key threats to the species are considered to be predation by feral cats, foxes and potentially dingoes, as well as habitat degradation from feral camels and rabbits (DAWE, 2021b). The Threatened Species Scientific Committee (TSSC) does not consider habitat loss from land clearing a key threat, in part from the large size and remoteness of the species' distribution.

**Conclusion**

The proposed clearing does not comprise the whole or a part of or is necessary for the maintenance of a significant habitat for indigenous fauna because:

- The amount of clearing proposed is small in relation to habitat available the local area (all habitats to be cleared are well represented in adjacent areas with maximum of 0.39% habitat loss (compared to survey area) to the most affected habitat type);
- No conservation significant species were detected during biological surveys, despite being targeted during optimal conditions (Biota 2021a)
- None of the habitats to be cleared were isolated and/or represented core habitat for conservation significant species.

Therefore, given the above, the project is not likely to be at variance with this Principle.

**Methodology**
Atlas of Living Australia, (2021; 2022)
Australian Museum, (2021)
Biota, (2021a)
DAWE, (2021b)
DBCA shapefiles
DoEE (2018)
EPBC Act Protected Matters Search Report 09/08/2022
Main Roads GIS Shapefiles
Species Profile and Threats Database (Accessed 19/08/2021)

## (c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.

**Proposal is not at variance to this Principle**

The Desktop Database Searches (Main Roads ArcGIS files and PMST report) identified no known records of rare flora listed under the Biodiversity Conservation Act 2016 from the project 40km radius desktop search.

The Biological Survey undertaken by Biota, (2021a) and the subsequent Targeted Flora Survey by Biota (2021b) and 360 Environmental, (2022) did not record any rare flora taxa from within the broader survey area.

As such, the project clearing is not at variance to this Principle.

**Methodology**
Biota, (2021a)
Biota, (2021b)
360 Environmental, (2022)
DBCA shapefiles
EPBC Act Protected Matters Search Report 09/08/2022

## (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.

**Proposed clearing is not at variance to this Principle**

The Desktop database searches (PMST report and DBCA Shapefiles) show no known records of State listed Threatened Ecological Communities (TECs) from within the project 40 km radius desktop search.

None of the vegetation communities recorded during the Biological Survey carried out by Biota, 2021 represents TECs.

As such, the proposed clearing is not at variance to this Principle.

**Methodology**
Biota, (2021a)
DBCA shapefiles
EPBC Act Protected Matters Search Report 09/08/2022

## (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.

| **Proposed clearing is not at variance to this Principle** |
| --- |
| As evident form the Table 3 and 4, the current extent of pre-European remnant vegetation is more than 30% "National Threshold Level" at all scales (State IBRA Bioregion, IBRA Subregion, LGA). All of the vegetation associations have 100% or close to 100% of their pre-European extent remaining intact. As such, the project is not located in an area with a regionally significant remnant vegetation. Given that the vegetation associations are widespread throughout the area and are well-represented locally and regionally, impacts due to project clearing is not likely to be significant.<br><br>Based on the above, the project is not at variance to this Principle. |
| **Methodology**<br>EPA (2016)<br>Government of Western Australia (2019)<br>ARCGIS Shapefiles - Pre-European Vegetation |

## (f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.

**Proposed clearing is at variance to this Principle**

Biota (2021a) mapped three vegetation units from the drainage lines that fall within the proposed project development envelope:

- *Eucalyptus camaldulensis* open woodland D3
- *Eucalyptus limitaris*, *Terminalia volucris* low open woodland D5

Of which D3 was considered to represent a Groundwater Dependant Ecosystem (GDE) given the presence of the phreatophytic species *Eucalyptus camaldulensis* (River Red Gum). A total of approximately 0.45 ha of D3 and D5 are proposed to be cleared under this application.

Given the above, the project is at variance to this Principle.

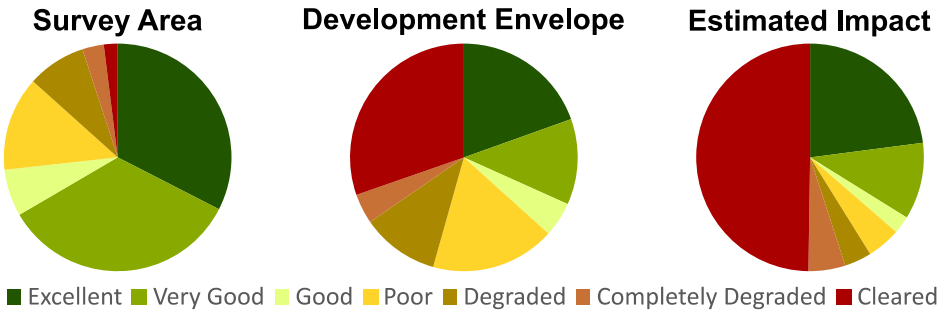
**Comments:**
No major watercourses or wetlands falls within the project development envelope and watercourses intersecting the development envelope are considered minor non-perennial. Where possible clearing associated with water bores, drill pads, access tracks and workers camp have been located outside of drainage areas to minimise potential clearing of riparian and wetland vegetation. The proposed clearing of vegetation associated with drainage lines is less than 0.5 hectares and relates to minor non-perennial watercourses.

**Methodology**
Biota, (2021a)
Main Roads Statewide Clearing Permit CPS 8181/15

## (g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.

**Proposed clearing is not likely to be at variance to this Principle**

The project is in an area prone to severe rainfall events, which could contribute to land degradation via flooding and heavy runoff. Out of 22 ha, approximaltely 18 ha will be cleared for access tracks and geotech cut line and 4 ha for Bore Drill pads and associated Dam. That means the proposed clearing is spread relatively linearly across a distance of 60 km. Works occur within a region where close to 100% of pre-European levels of native vegetation remain. Clearing works will be completed in a dry period and no interaction with groundwater or interruption of nature surface water flows is expected. As such the risk of the project causing appreciable land degradation is minimal. Almost 50% of the required clearing will occur in existing cleared areas (as illustrated in the chart below).




The project is located within an area mapped as cq(p4) - Extremely Low Probability of Occurrence of ASS.

The project will operate under Main Roads standard environment management plan which will have appropriate provisions to address any land degradation issues such as erosion and flooding. Operation controls will include but limited to: construction activities will be undertaken in summer to reduce the potential for soil erosion and drainage line siltation; exposed soil working surfaces will be minimised; material such as gravel, crushed rock and excavated material will be stockpiled away from drainage paths and covered to prevent erosion; processes and procedures will be developed to prevent erosion and sedimentation in the works area and methods of soil stabilisation and sediment control will be implemented where required.

As such, the project is not likely to be at variance to this Principle.

**Methodology**
CSIRO, (2014)
Main Roads ArcGIS Shapefiles

### (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.

**Proposed clearing is not at variance to this Principle**

A search of DBCA Database idnentifies no nature reserves or conservation areas in the immediate vicinity of the project devleopment envelope. The Ord River Regeneration Reserve, an area of DBCA-managed conservation estate established to revegetate a degraded portion of the Ord River catchment and reduce downstream siltation, is located more than 11km from the proposal area.

The project is not at variance to this Principle.

**Methodology**
DBCA shapefiles - Legislated Lands and Waters (DBCA 2022)

### (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.

**Proposed clearing is not likely to be at variance to this Principle**

The project development envelope inetrsects within the Fitzroy River and Tributaries, Ord River and Tributaries/ Ord Irrigation District Surface water areas and Groundwater Area and Canning-Kimberley Groundwater Area both of which are Proclaimed Areas under RIWI Act. The Halls Creek Water Reserve, a Public Drinking water Source area is located 13 km north east of the project. No major watercoureses intersects the project development envelope. There are svereal minor non-perennial watercourses along the length of the project development envelope. The clearing will be undertaken in dry conditions when these non perennial minor watercourses dry out.

The proposed clearing is not considered to disturb or interrupt any natural drainage or cause an alteration to surface water flows. The proposal is to construct 8 new proposed bores (yet to be drilled and deemed viable), 3 existing bores and associated turkeys' nest. Existing bores are covered under a current 5C Licence to abstract water (GWL 172775 and 182903). A 26D licence application has been submitted to construct new bores (D22#920462) and it is anticipated that the additional bores will be added to an existing 5C licence (to take water). Abstraction of groundwater associated with the project will be temporary and will be managed in accordance with the conditions of the licence. As such, no significant impacts on groundwater are expected.

The works will adhere to Main Roads Standard environment management plan to ensure the works won't disturb the ground water or interrupt the natural surface water flows. The will have appropriate provisions to

manage possible contamination risk as spill incidents due to fuel leakage during on-ground works. Operational controls will include: No storage of hazardous materials, fuels or oils within 100m of any watercourse or wetland; All hazardous materials fuels or oils storage areas will be bunded; Spill kits will be in place at all storage areas and Induction program to make all personnel aware of the appropriate response to spills.

Based on the above, the project is unlikely to be at variance to this Principle.

**Methodology**
ARCGIS shapefiles- Watercourse
DWER- Shapefiles

## (j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.

**Proposed clearing is not likely to be at variance to this Principle**

The subregional climate is described as dry winter and hot semi-arid summer with an average annual rainfall of 438 mm (Ruby Plains (Site ID- 2026) (BoM, 2022)). Extreme weather events are a significant component of Kimberley climate. Tropical cyclones and tropical storms can bring heavy and sustained rainfall, particularly in the months leading up to and during the wet season. It is common for a large proportion of the region's rainfall to be recorded in one single event, leading to extensive flooding of rivers, creeks and roadways.

The climatic conditions are the main factor influencing flooding in the region. The proposed clearing of 21.9 ha is spread linearly over 60 km and will be undertaken during dry conditions. As such the potential for this small-scale clearing to cause or exacerbate the flooding is unlikely. Besides standard flood management measures will be implemented as a part of Main Roads standard environment management plan during on-ground works.

Given the above, the proposed clearing is not likely to be at variance to this Principle.

**Methodology**
BoM, 2022
Main Roads ArcGIS Shapefiles

# 6 ADDITIONAL ACTIONS REQUIRED

Table 5 summarises what further pre-clearing impact assessment and vegetation management is required in accordance with CPS 818.

**Table 5. Summary of Additional Management Actions Required by CPS 818**

| Impact of Clearing | Yes/No or NA | *Further Action Required* |
|---|---|---|
| **1.** The CAR indicates that the clearing is 'At Variance' or 'May be at Variance' with one or more of the Clearing Principles.<br><br>Where the clearing is at variance or may be at variance to Clearing Principle (f) and no other Clearing Principle, and the area of the proposed clearing is less than 0.5 hectares in size and the Clearing Principle (f) impacts only relate to:<br>(i) a minor non-perennial watercourse(s);<br>(ii) a wetland(s) classed as a multiple use management category wetland(s); and/or<br>(iii) a wetland that is not a defined wetland;<br>the preparation of an Assessment Report, as required by condition 6(e), is not required. | **No** | No further action required. |
| **2.** Clearing is at variance or may be at variance with Clearing Principle (g) land degradation, (i) surface or underground water quality or (j) the incidence of flooding. | **No** | No further action required |
| **3.** The project involves clearing for temporary works (as defined by CPS 818). | **No** | No further action required. |
| **4 a.** Project is within Region that:<br>- Has rainfall greater than 400mm and<br>- Is South of the 26th parallel and<br>- Works are in 'Other than dry conditions' and<br>- Works have potential for **uninfested** areas to be impacted | **No** | No further action required. |

| Impact of Clearing | Yes/No or NA | *Further Action Required* |
|---|---|---|
| **4b.** Does the proposed works require clearing within or adjacent to DBCA estate in non-dry conditions? | **No** | No further action required. |
| **5.** Main Roads has been notified by DWER or an environmental specialist that the area to be cleared is susceptible to a pathogen other than dieback | **No** | No further action required. |
| **6.** The vegetation within the area to be cleared and/or the surrounding vegetation in a good or better condition and weeds likely to spread to and result in environmental harm to adjacent areas of native vegetation that are in good or better condition | **No** | No further action required.<br>The proposal includes implementation of a Main Roads standard environment management plan which will have appropriate provisions to prevent the spread of weeds to adjacent areas of native vegetation. |

# 7 STAKEHOLDER CONSULTATION

The proposed clearing has been assessed as not likely to be at variance to any clearing principle. Therefore, Main Roads is not required to undertake stakeholder consultation in accordance with CPS 818/15 Condition 8.

Nevertheless, interested parties have been consulted on the future upgrade works, and the proposed layout takes into consideration the recommendations from these consultations:

1. Koongie Elvire Traditional Owners – Consulted through a number of meetings and an Aboriginal Cultural Heritage Survey (Cultural Research Management 2022a).
2. Jaru Traditional Owners – Consulted through a number of meetings and an Aboriginal Cultural Heritage Survey (Cultural Research Management 2022b).
3. Halls Creek Community – Consulted through three community consultation information sessions where the proposed alignment was presented.
4. Shire of Halls Creek – a key partner for the road upgrade and have been involved throughout the design process.

No concerns relating to clearing of native vegetation were raised by any of the above stakeholders, apart from Traditional Owners who would like to see clearing impacts minimised where possible.

# 8 VEGETATION MANAGEMENT

Main Roads will avoid clearing native vegetation where possible. Where clearing cannot be avoided then this clearing is kept to a minimum. Vegetation will be managed in accordance with the Main Roads standard environment management plan.

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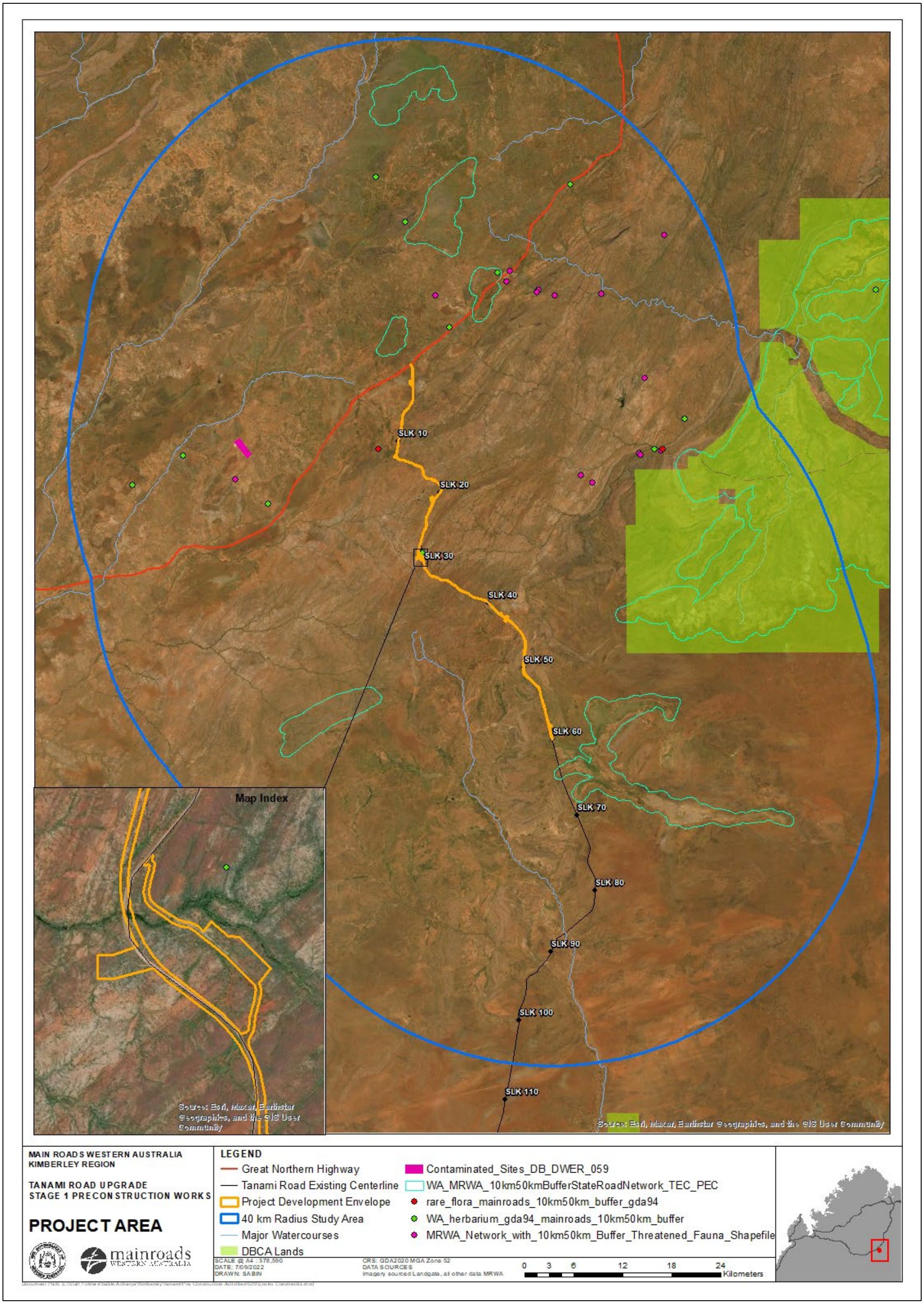
# 10 APPENDICES

| Appendix | Title |
|---|---|
| **Appendix 1** | DBCA Database Searches |
| **Appendix 2** | EPBC Act Protected Matters Search Report |

## Appendix 1: DBCA Database Searches



## Appendix 2: EPBC Act Protected Matters Search Report

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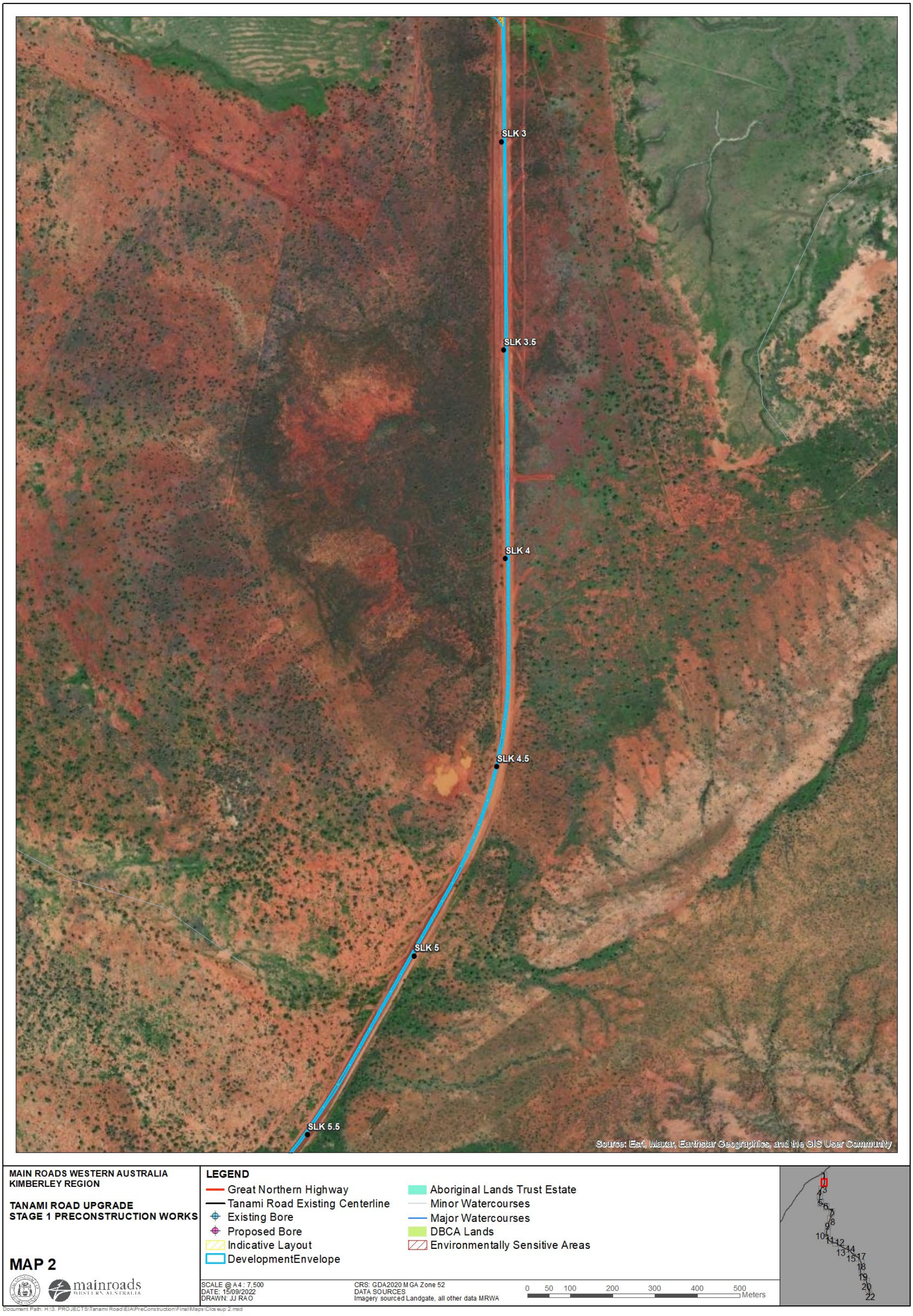
## Appendix 3: Tanami Pre Construction Activities Stage 1- Project Area Detailed Map


**Map1. Project Area**



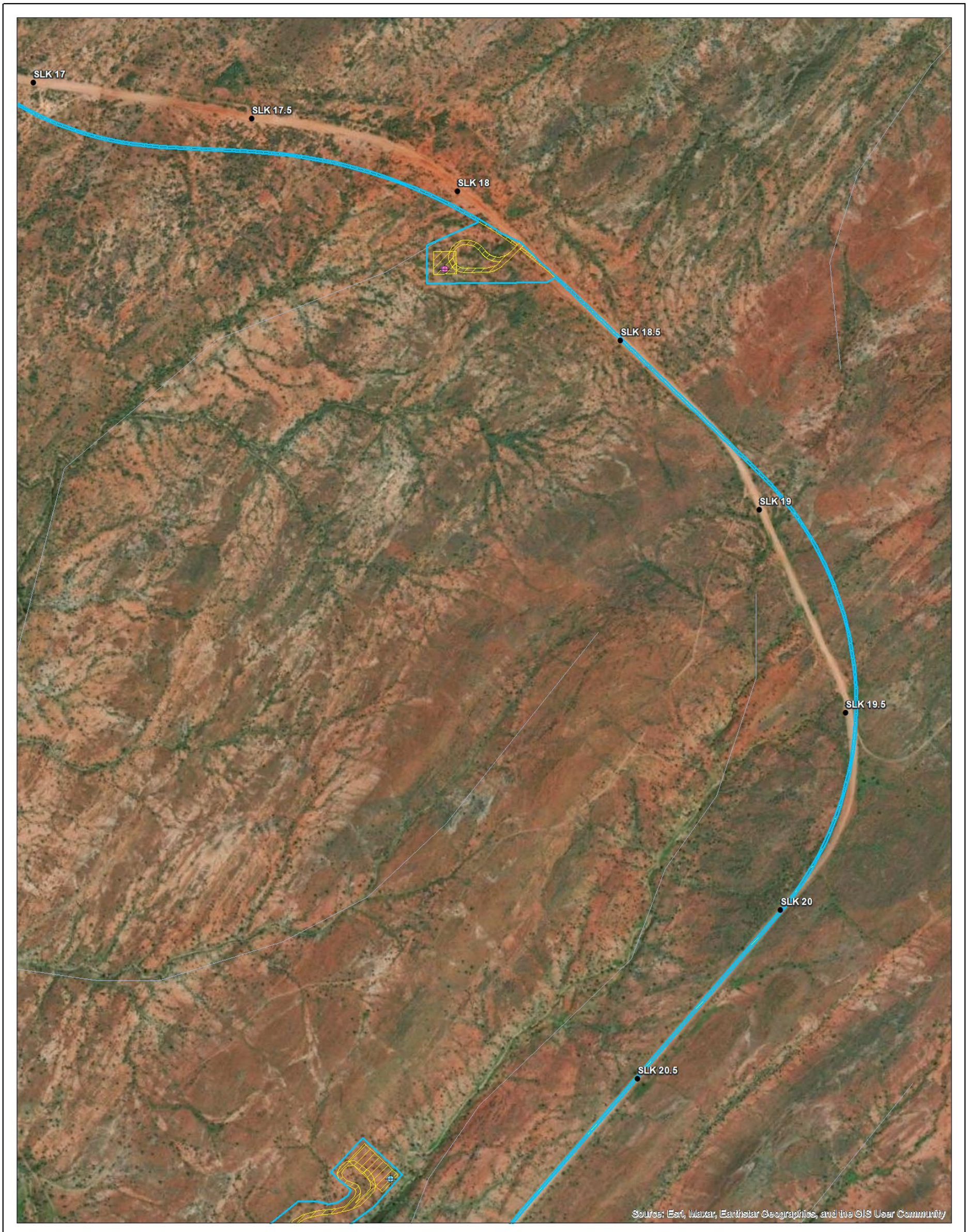

**Map 2. Project Area**


**Map 3. Project Area**


**Map 4. Project Area**


**Map 5. Project Area**

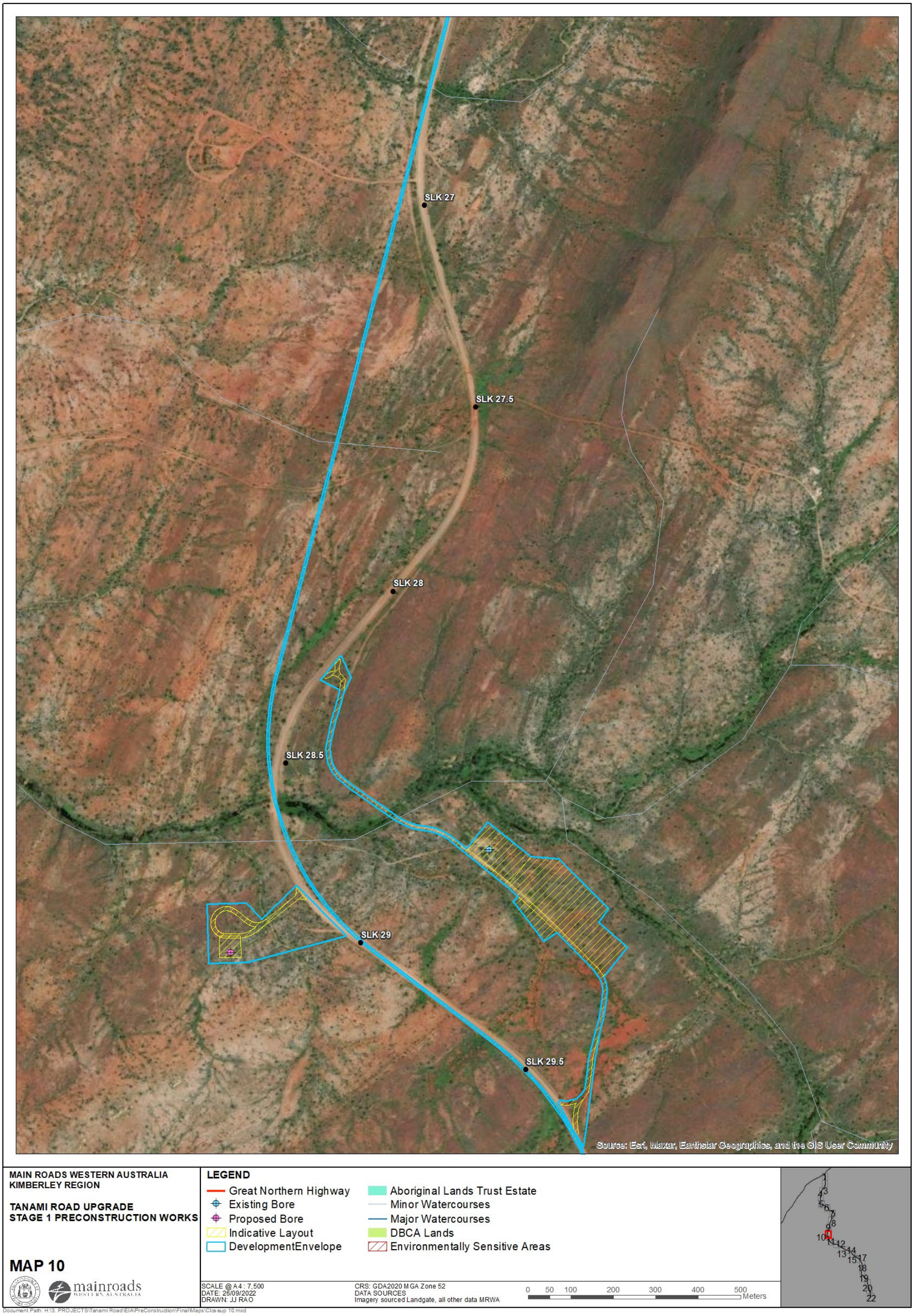

**Map 6. Project Area**




**Map 7. Project Area**


**Map 8. Project Area**


**Map 9. Project Area**



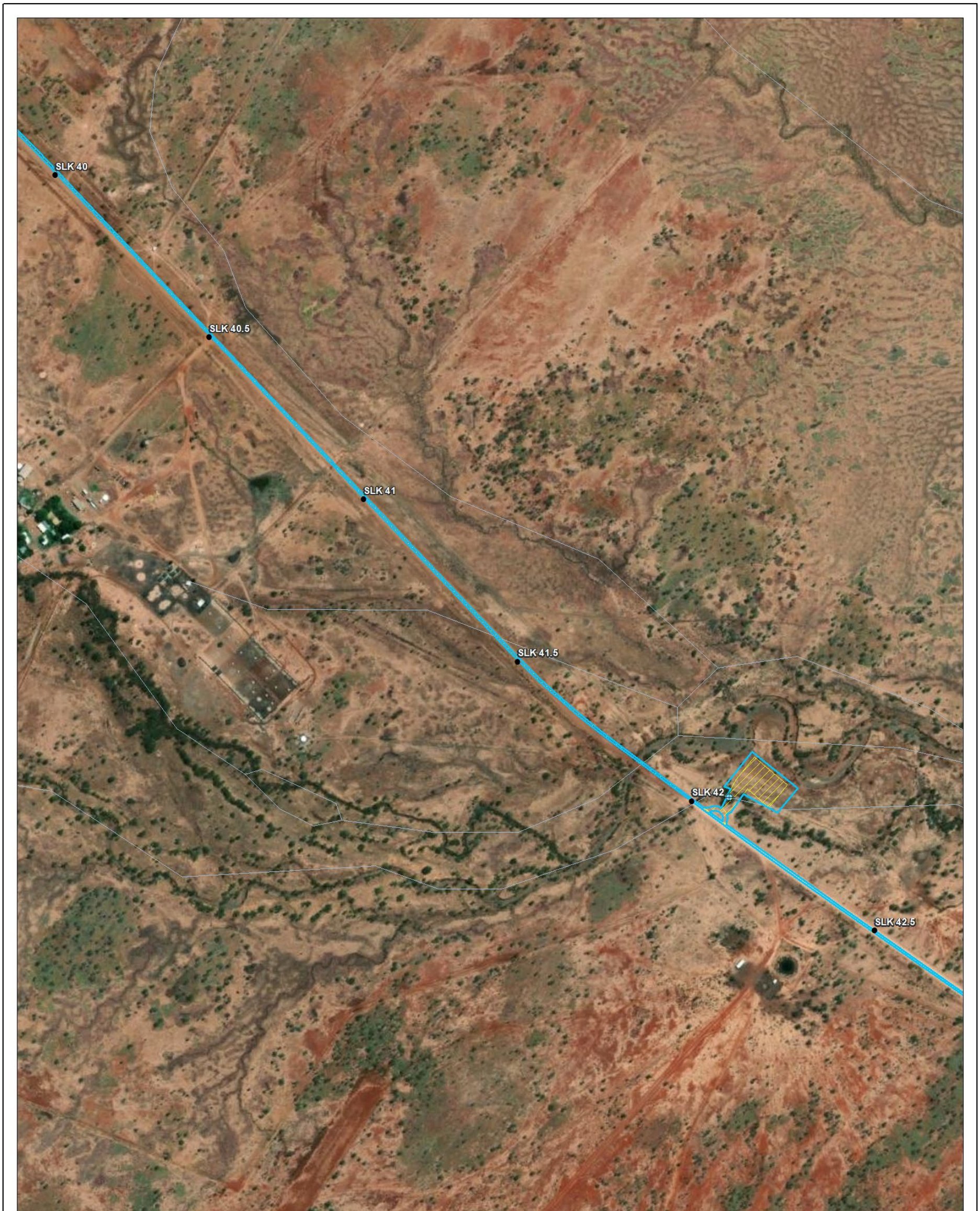

**Map 10. Project Area**


**Map 11. Project Area**


**Map 12. Project Area**

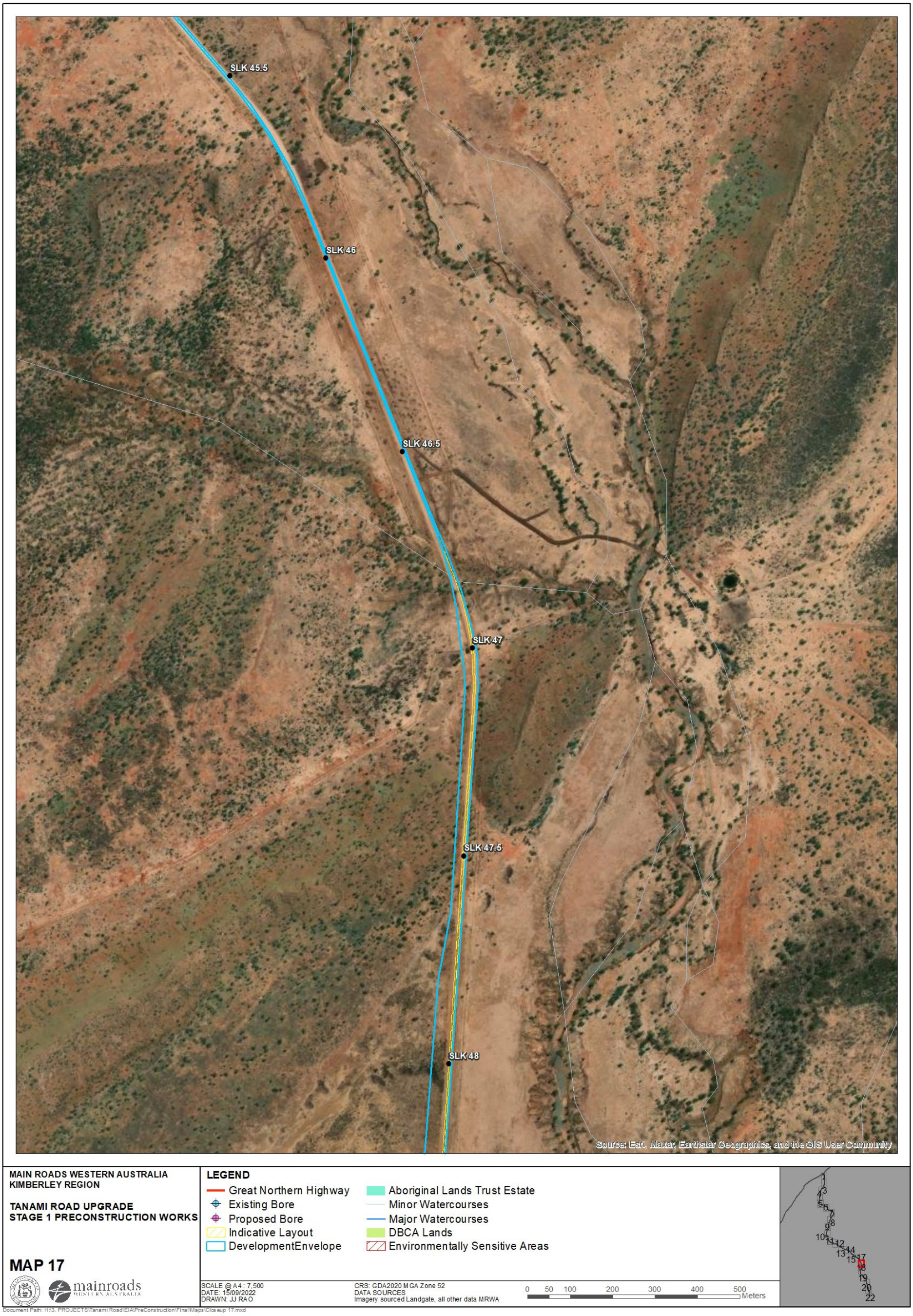

**Map 13. Project Area**


**Map 14. Project Area**




**Map 15. Project Area**


**Map 16. Project Area**



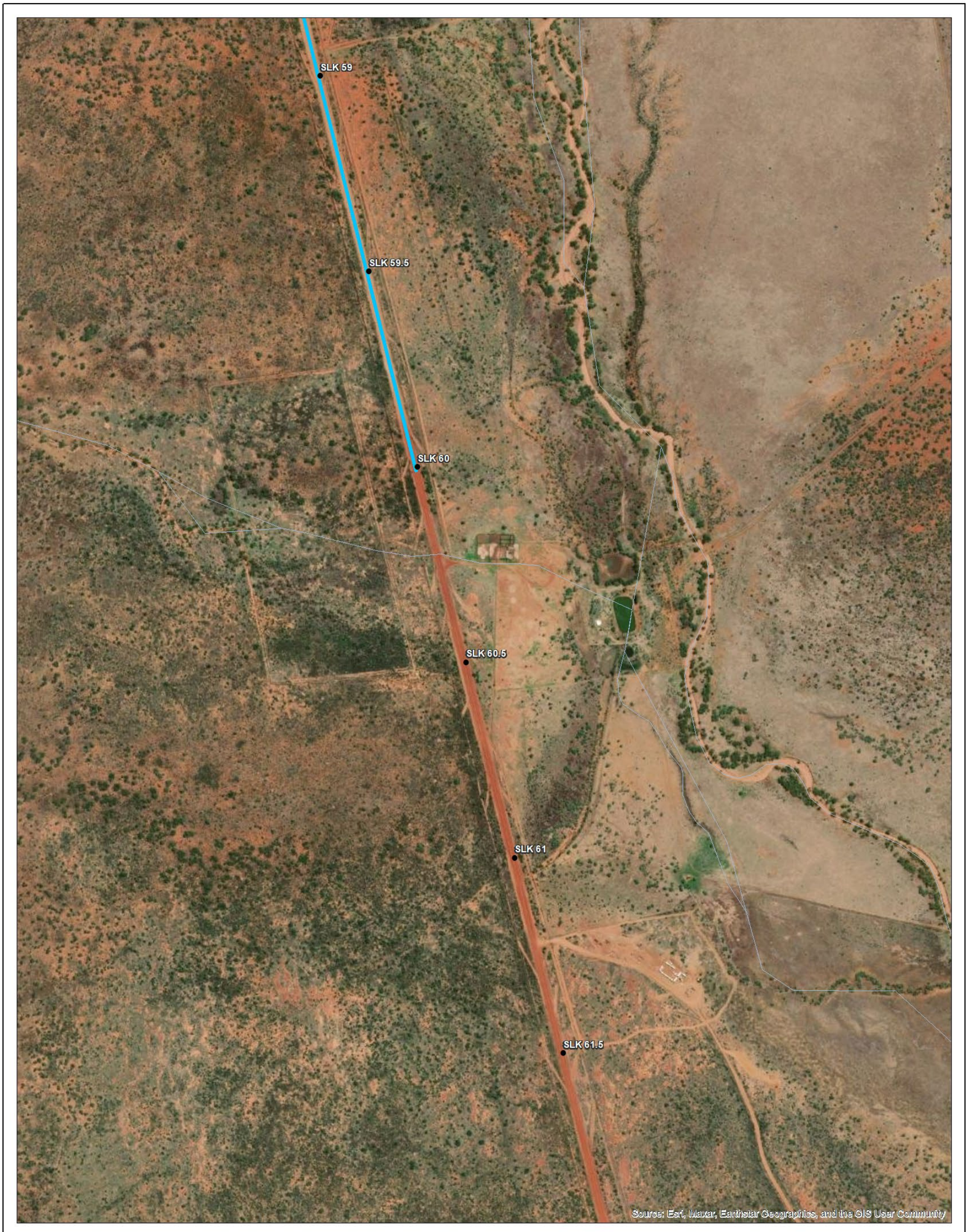

**Map 17. Project Area**


**Map 18. Project Area**


**Map 19. Project Area**


**Map 20. Project Area**


**Map 21. Project Area**




**Map 22. Project Area**