# Clearing Desktop Report – CPS 818

We're working for Western Australia.

Wiluna to Meekatharra Package 1
Drainage and shoulder widening works
Goldfields Highway (H049)
Goldfields-Esperance Region
0577



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# Document Control

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# 1 PROPOSAL

## 1.1 Purpose and Justification

Goldfields Highway (H049) is an important link in the Regional Road Network providing access between Kalgoorlie/Boulder in the Eastern Goldfields through to Meekatharra, the southern Gascoyne, and Pilbara Regions of Western Australia.

The increase in mining activity along this section of Goldfields Highway has increased traffic volume, especially heavy vehicles carting materials. As a result, the section between Wiluna and Meekatharra requires increasingly frequent maintenance with a corresponding increase in costs.

Proposed works under this proposal include widening of the current road formation, sealing unsealed sections of the highway and improvement of drainage infrastructure to direct overland surface water flows off the road formation and into to existing floodways adjacent to the road alignment.

The Project Objectives are:

- Improve road user safety, to reduce the frequency and severity of crashes;
- Reduce the risk to safe freight movements and efficiency;
- Provide consistent driver experience and comfort by addressing driver fatigue and frustration,
- Implement revised Road Design Criteria.

### *1.1.1 Main Roads Approach to Road Safety and the Environment*

Main Roads is committed to minimising the environmental impacts of all of its activities, and manages the State road network to achieve balanced economic, social, safety and environmental benefits for the community. Main Roads recognises that Western Australia's environment is significant from a global perspective and the unique conservation values that are contained within its road reserve. Main Roads road network often adjoins natural areas and, in some locations, the reserve itself hosts remnant vegetation with high environmental values. Although the reserves were not established for this purpose, Main Roads recognises that it has a responsibility to conserve the environmental values that occur within the State's road network and minimise the impact its proposals have on the environment. In addition to providing a safe and efficient road network for all people using the roads under its control, Main Roads is also committed to protecting and enhancing the natural environment.

In accordance with National and State Government road safety policies, Main Roads is also committed to substantially reducing road trauma on the road network through Safe System principles. The Safe System approach acknowledges that more than two thirds of all serious crashes are due to human error rather than deliberate risk taking (e.g. speeding or drink driving) and seeks to improve behaviour through education and enforcement while managing the safety of vehicles, speeds and the road and road infrastructure. It is shown that improving sub-optimal road formation will substantially reduce the likelihood and severity of road crashes. For example, according to the Road Safety Management Guideline, increasing the sealed shoulder from 0.5 m to 2 m will reduce Killed and Seriously Injured numbers by more than 50%.

As the statutory authority responsible for providing and managing a safe and efficient main road network in Western Australia, Main Roads focuses on improving road safety by thoroughly

considering all environmental, economic and community benefits and impacts. It operates on a hierarchy of avoiding, minimising, reducing and then, if required, offsetting our environmental impacts. This has been achieved through changes in proposal scope and design. Main Roads regularly reduces its clearing footprint by restricting earthworks limits for proposals, steepening batters, installing barriers, establishing borrow pits in cleared paddocks and avoiding temporary clearing for storage, stockpiles and turn around bays to avoid and minimise its impacts.

Further details on measures to avoid, minimise and reduce are provided in Section 1.5.

## 1.2 Proposal Scope

Main Roads proposes to improve a section (SLK 642.8 to 651.2) of Goldfields Highway between the town sites of Meekatharra and Wiluna under this proposal. The works will comprise the following components:

- Regrading, shoulder widening, overlay and seal of a 4.8 km section of unsealed highway.
- New road delineation, signage and line marking.
- Upgrade drainage infrastructure and improve existing road drainage, especially between SLK 642.8 to 647.5 to better manage sheet flow at existing floodway.

## 1.3 Proposal Location

The Proposal Area is located on Goldfields Highway (H049), Magellan Section, SLK 642.8 to 651.2, Shire of Wiluna as shown in Figure 1.

## 1.4 Clearing Details

**Proposed Clearing to be undertaken using CPS 818:**
2.18 ha

**Areas of Native Vegetation Clearing:**
The areas of native vegetation to be cleared are shown in Appendix 1, Figure 2.1 to 2.5.

**Type of Native Vegetation:**
Two vegetation types will be cleared under this proposal: Mixed Acacia tall shrubland (0.56 ha) and Chenopod shrubland (1.62 ha).

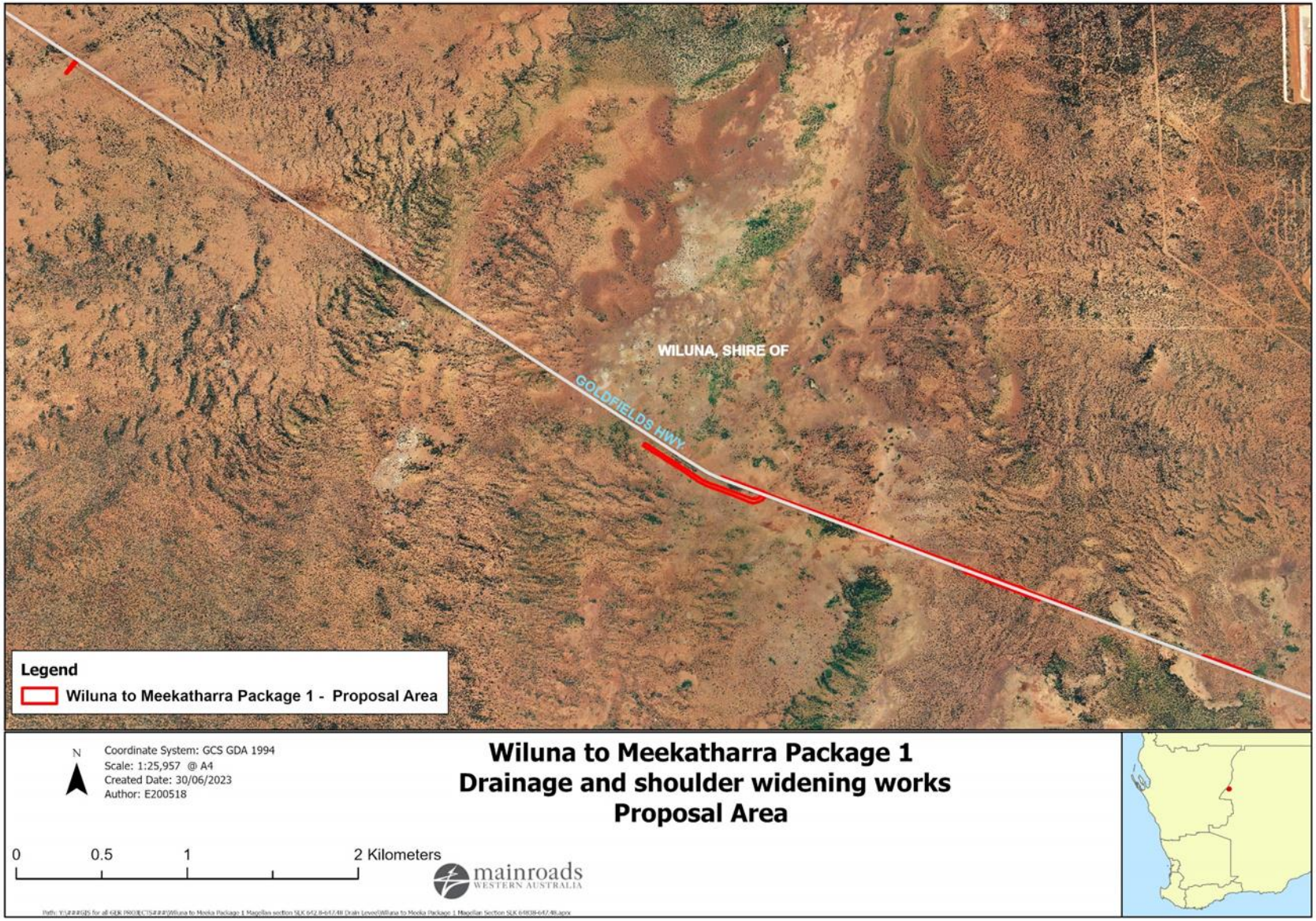


**Figure 1. Proposal Area**

## 1.5 Alternatives to Native Vegetation Clearing Considered During Proposal Development

The following alternatives to clearing were considered during the development of the proposal:

- Do not upgrade the road, however this will potentially result in a poorer safety outcome and may result in future fatalities or serious injuries and further degradation of the State road asset.
- Main Roads retains frangible vegetation where a clear zone is to be established for road projects. For this project, however, clearing will only be required to accommodate the road formation, with no clear zone being established. Accordingly, the retention of frangible vegetation does not apply to this proposal
- Reducing the speed limit to minimise clearing requirements, while still balancing safety (driver fatigue) and freight efficiency. Speed Limits are an essential mechanism to ensure the safe and efficient operation of road networks. The application of appropriate speed limits and other traffic management measures is a key mechanism in managing vehicle speeds to achieve desired safety, mobility, traffic management, local amenity, and road user expectations. There are several factors involved in road safety, including road conditions, driver behaviour and overall road design. Except in special situations, reducing speed limits below national standards on state and national roads is not typically supported as it has the potential to contribute to driver frustration, impatience, tiredness and recklessness. The environmental values protected by reducing the speed limit, do not justify the impacts on freight efficiencies nor road user safety. Accordingly, the reduction of the speed limits to avoid clearing of native vegetation for this proposal is not proposed.

## 1.6 Measures to Avoid, Minimise, Reduce and Manage Proposal Clearing Impacts

The design and management measures implemented to avoid and minimise the potential clearing impacts of the Proposal are provided in Table 1.

Further details on how the clearing impacts have been avoided and minimised include:

- Existing material pits, laydown areas and access tracks being used,
- Drainage alignment shortened to avoid additional clearing,
- Clearing boundaries clearly demarcated prior to clearing,
- Clearing activities to ensure machinery stays within the approved clearing area,
- Pre-Starts to detail the approved clearing areas,
- Infrastructure used to maintain surface drainage patterns, if required (e.g. culverts, diversions),
- Hygiene inspections conducted for all vehicles and machinery, prior to entry and exit to site, and
- Hygiene inspection checklist will be used to record the results of hygiene inspections.

**Table 1. Measures Undertaken to Avoid, Minimise, Reduce and Manage the Proposal Clearing Impacts**

| Design or Management Measure | Discussion and Justification |
|---|---|
| **Alignment to one side of existing road** | Drainage works will only occur to the south of the existing road and will not impact on vegetation north of the road. This will reduce impacts associated with machinery access and laydown areas to the north of the road alignment during works. |
| **Alternative alignment located within pasture or degraded areas** | The drainage alignment has been positioned approximately 30 m south of the road to avoid clearing vegetation of better condition. Clearing requirements have been reduced to clear sparse, degraded shrubland as opposed to dense shrubland of better condition and higher fauna habitat value.<br>Road improvements will be maintained within the existing road alignment, clearing is minimal and will involve clearing of roadside vegetation. |
| **Use of existing cleared areas for access tracks, construction storage and stockpiling** | No temporary clearing for storage, side tracks, stockpiles, turn around bays etc. will be undertaken as part of proposed activities. Additional clearing will be avoided as the site office, materials storage areas, construction vehicles/machinery and access tracks will be located on previously disturbed or cleared areas. |
| **Drainage modification** | Existing offshoot drains will be regraded to maintain functionality and suitability for management of surface water flows during significant rainfall events in preference for increased impacts associated with culvert installations. The drain levee works, as mentioned above, will be constructed 30m south of the existing road formation and will result in reduced total clearing and avoid impacts to vegetation assessed to be in a better quality. |

## 1.7 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, Main Roads has also had regard to the below instruments where relevant.

**Other Legislation potentially relevant 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 (Government of WA, December 2014)
- Procedure: Native vegetation clearing permits (Government of WA, October 2019)
- Environmental Offsets Guidelines (Government of Western Australia, 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.

# 2 SCOPE AND METHODOLOGY OF CLEARING ASSESSMENT

Native vegetation will be cleared to accommodate this Proposal. This clearing will be undertaken using the Main Roads Statewide Clearing Permit CPS 818.

To comply with CPS 818, Main Roads must prepare a Clearing Desktop Report (CDR).

The CDR outlines the key activities associated with the Proposal, the existing environment and an assessment of native vegetation clearing. This assessment provides an evaluation of the vegetation clearing impacts associated with the Proposal using the ten Clearing Principles listed under s51 of the *Environmental Protection Act 1986* (EP Act) and strategies used to manage vegetation clearing.

## 2.1 Report Terminology and Sources

The following terms are used in this Clearing Report

- **Native Vegetation Clearing Area** – The maximum amount of native vegetation to be cleared for the Proposal that will accommodate the designed earthworks and, typically, a nominal buffer to allow for the safe movement of machinery during construction.

- **Development Envelope** – The maximum extent within which the Clearing Area will be located. This envelope larger than the Clearing Area and the Proposal Area to allow for minor changes to the Proposal footprint as the design process continues, and to account for minor and unexpected changes that may occur during construction, such as working to avoid a large tree or encountering buried boulders or services. This flexibility allows the site personnel to make modifications to the Proposal to avoid areas that may contain better environmental values. The CDR has assessed all environmental values within the Development Envelope as though all of these values will be impacted, up to the amount specified within the Clearing Area.

- **Proposal Area** – The total footprint of the Proposal including both cleared and uncleared areas. This is based on the current design and is less than the development envelope. It usually includes a buffer to allow for constructability and the movement of machinery during construction.

- **Study Area** – Area covered by the Desktop Assessment. The Study Area for the Proposal is confined to a local area of a 30 km radius.

## 2.2 Desktop Assessment

A desktop assessment of the Development Envelope was undertaken by viewing internal datasets and other government agency managed databases, and consulting with relevant stakeholders where necessary.

GIS layer viewing and mapping is done using ArcMap and/or Main Roads corporate mapping system known as iMaps. Referencing of the GIS layers accessed is done under the relevant methodology section of each clearing principle. Government managed databases were searched to locate additional information, which are found under References in Section 8.

## 2.3 Surveys and Assessments

The following surveys/assessments were undertaken to inform this CDR:

- Goldfields Highway Biological Survey (GHD, 2013).

A summary of the methodology and the results of the above surveys are provided in Section 3.

# 3 SUMMARY OF SURVEYS

## 3.1 Overview of Surveys

Biological and targeted surveys conducted for the proposal are outlined in Table 2. A summary of the findings in these reports are presented in Sections 3.2.

**Table 2. Summary of Biological and Targeted Surveys Relevant to the Proposal**

| Consultant & Survey Name | Survey Details |
|---|---|
| **GHD (2013)**<br>Goldfields Highway<br>Wiluna to Meekatharra<br>SLK 642.8 – 772.6<br>Biological Assessment | **Survey Area:** Survey area comprised approximately 17,962 ha adjacent to Goldfields Highway between the towns of Wiluna and Meekatharra (SLK 642.8 – 772.6), the survey corridor boundary was limited to 500 m either side of the existing highway alignment.<br><br>**Type:** Level 2 vegetation and flora survey (EPA 2004a) to identify and describe the dominant vegetation units, assess vegetation condition, identify and record vascular flora taxa present at the time of survey. Additionally, opportunistic searching for conservation significant or other significant ecological communities and flora taxa was undertaken.<br><br>Fauna survey involved targeted, species-specific survey methods, aimed at identifying and mapping the presence of conservation significant fauna species and suitable habitat. This information was used to inform a likelihood of occurrence assessment for each of the conservation significant fauna species identified in a preliminary desktop assessment. In addition to the targeted survey, GHD also undertook a Level 1 fauna survey (reconnaissance survey) of the Survey area<br><br>**Timing:** Vegetation and flora survey from 28 October to 5 November 2013. The fauna field survey was undertaken in conjunction with the vegetation and flora survey.<br>**Survey Results Shapefile TRIM Ref:** D14#627386<br>**Document TRIM Ref:** D14#627341 |

## 3.2 Summary of Biological Survey

GHD Pty Ltd (GHD) conducted a biological assessment between SLK 613.28 to 793.28 Goldfields Highway, the survey was completed within a 1 km corridor (500 m either side of the road centreline) between October and November 2013 (GHD, 2013). The Survey area covered a total area of 17,962 ha which included the 3.14 ha Proposal area.

The biological survey identified the following environmental aspects within the Survey area:

**Vegetation and Flora**

- 28 vegetation associations (including two disturbance related associations) were identified within the Survey area and described based on field observations, including:
  - Woodlands (containing six vegetation associations)
  - Tall shrublands (containing 11 vegetation associations)
  - Low shrublands (containing five vegetation associations)
  - Tussock grasslands (containing two vegetation associations)
  - Hummock grasslands (containing two vegetation associations)
  - Disturbed (containing two vegetation associations)

- Vegetation mapped within the Proposal area was rated as Excellent to Very Good and Very Good (Keighery 1994 scale). Grazing and trampling impacts were generally more prevalent within drainage lines and adjacent floodplain areas, as well as the margins of artificial water sources. The most noticeable areas of disturbance throughout the Proposal area included existing pastoral infrastructure (access tracks) and roadside margins.

- No Threatened Ecological Communities (TEC) occur, or likely to occur, within the Survey area. One Priority Ecological Community (PEC) was recorded within the Survey area: Calcrete Groundwater Assemblages (CGA) (Priority 1). No identified PECs occur within the Proposal area.

- A total of 398 flora taxa (including subspecies and varieties) representing 53 families and 154 genera were recorded in the Survey area during the field survey. This total comprised 391 native taxa and seven introduced taxa.

  The field survey did not record any flora taxa listed under Commonwealth or State legislation within the Survey area.

  Seven Priority listed flora taxa were recorded in the Survey area. Species identified during the biological survey are listed below;
  - *Eremophila congesta* (Priority 1),
  - *Calytrix verruculosa* (Priority 3),
  - *Homalocalyx echinulatus* (Priority 3),
  - *Indigofera sp. Gilesii* (Priority 3),
  - *Ptilotus luteolus* (Priority 3),
  - *Sauropus ramosissimus* (Priority 3),
  - *Stackhousia clementii* (Priority 3).

  None of the recorded species will be impacted by the proposal, the closest identified species (*Eremophila congesta*) occurs over 14 km south-east of the Proposal area.

**Fauna habitat and Fauna:**

- Eight broad fauna habitat types were identified in the Survey area, as listed below:
  – *Acacia* shrubland over tussock grasses
  – *Acacia* shrubland over hummock grasses
  – Mulga (sparse to open) shrubland over tussock grassland
  – Tussock grassland
  – Chenopod shrubland
  – *Eucalyptus*/*Corymbia* woodland (including riparian habitat around Bubble Creek)
  – Rocky outcrops, breakaways and Banded Ironstone Formation (BIF) hills
  – Sand dune.

  Two habitat types occur within the Proposal area and will be cleared under this proposal, these include: Mixed Acacia tall shrubland (0.56 ha) and Chenopod shrubland (1.62 ha).

- A desktop review of the of the Survey Area identified a total of 107 bird, 68 reptile, 31 mammal and four amphibian species previously recorded within or adjacent to the Survey area. In addition, nine exotic (introduced) fauna species were determined to occur or likely to occur in the Survey Area. Following the field survey 31 bird, five mammal and two reptile species were recorded in the Survey area, a total of five introduced mammals were also recorded within the Survey area.

  The fauna survey recorded one current conservation significant species, the Grey Falcon (*Falco hypoleucos*), listed as Vulnerable under the BC Act and EPBC Act.

  Based on current conservation species listings under the BC Act and EPBC Act, two species Grey Falcon (*Falco hypoleucos)* and Malleefowl (*Leipoa ocellata)* were the only species determined to be Present or Likely to occur in the Proposal Area. This was determined from a likelihood of occurrence assessment which takes into account field survey data, habitat present, known species distribution and previous records of each species.

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# 4 VEGETATION DETAILS

## 4.1 Proposal Site Vegetation Description

The Proposal area is located within the Murchison Interim Biogeographic Regionalisation for Australia (IBRA) Region and Eastern Murchison sub-region. Broad Vegetation of this IBRA region is described as being of Mulga low woodlands rich in ephemerals.

Two habitat types occur within the Proposal Area and will be cleared under this proposal, these include: Mixed Acacia tall shrubland -VA04 (0.56 ha) and Chenopod shrubland-VA14 (1.62 ha).

Table 3 and Table 4 provide details of the vegetation types and their condition within the Proposal Area and the remaining extents of these associations.

For a full description of the existing vegetation, refer to the Biological Report found at D14#627341.

**Table 3. Summary of Vegetation Types within Clearing Area**

| Vegetation Type | Extent within Clearing Area (ha) | Total Extent Mapped (ha) within Survey Area |
|---|---|---|
| Mixed Acacia tall shrubland (VA04) | 0.56 | *10,228.7* |
| Chenopod shrubland (VA14) | 1.62 | *432.5* |
| **TOTAL** | **2.18** | **10,721.2** |

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

| Pre-European Vegetation Association | Scale | Pre–European Extent (ha) | Current Extent (ha) | % Remaining | % Current Extent in DBCA Managed Land (proportion of pre-European Extent) |
|---|---|---|---|---|---|
| **Veg Assoc No.** 204 -Succulent steppe with open scrub, scattered mulga and Acacia sclerosperma over saltbush and bluebush. | **Statewide: WA** | 199,475.40 | 198,735.09 | 99.62 | 6.77 |
| | **IBRA Bioregion** Murchison | 185,601.67 | 184,861.36 | 99.60 | 7.26 |
| | **IBRA Sub-region** Eastern Murchison | 75,042.26 | 74,305.79 | 99.02 | 11.47 |
| | **Local Government Authority** SHIRE OF MEEKATHARRA SHIRE OF WILUNA | 67757.02 39116.93 | 67754.55 38380.47 | 100 98.12 | 12.70 - |

# 5 ASSESSMENT AGAINST THE TEN CLEARING PRINCIPLES

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

Each principle has been assessed in accordance with the former Department of Environment Regulation (now Department of Water and Environmental Regulation (DWER) '*A Guide to the Assessment of Applications to Clear Native Vegetation*' (Department of Environment Regulation, 2014) and other relevant clearing permit application decision reports prepared by DWER.

**The proposed clearing is not likely to be at variance with the ten Clearing Principles**.

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

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

**Assessment**

**Flora:**

GHD Pty Ltd (GHD) conducted a Level 2 vegetation and flora (EPA 2004a) survey of the Wiluna to Meekatharra PortLink Project corridor between October and November 2013. The survey covered a corridor 500 m either side of the Goldfields Highway centreline between (SLK) 607.85 to 793 which encompassed the Proposal Area The Proposal Area has been historically exposed to grazing by livestock, native mammals and feral animals and is partially (approx 60%) in a Degraded to Completely Degraded condition with minimal to no vegetation structure (GHD,2013). Grazing and trampling impacts were observed during the biological survey (GHD, 2013) within broad sheet wash areas, typical of the Proposal Area.

A total of 1.27 ha (approximetly 40%) of fragmented native vegetation patches in Very Good to Excellent condition (GHD,2013) occurs within the Proposal Area. Vegetation was mapped into two vegetation types; Mixed Acacia tall shrubland (0.56 ha) and Chenopod shrubland (1.62 ha).

Desktop searches of the EPBC Act Protected Matters database, DBCA Rare Flora Databases, NatureMap database and the Western Australian Herbarium (WAHerb) records identified the presence/potential presence/potential presence of 38 conservation significant flora taxa within the Study Area (GHD,2013).

To supplement the GHD (2013) survey, desktop searches of current (2023) GIS databases were conducted to inform an assesment of variance to Principle a (Figure 3). Current database searches confirmed that no Threatened or Priority Flora are located within the Proposal Area.

No conservation significant flora species identified during desktop assessments were positiviely identified within the Proposal Area (GHD,2013).

The field survey did not record any EPBC Act or BC Act-listed flora taxa within the Survey Area, however, seven DBCA Priority-listed flora taxa were recorded:

- *Eremophila congesta* (Priority 1),
- *Calytrix verruculosa* (Priority 3),
- *Homalocalyx echinulatus* (Priority 3),
- *Indigofera sp. Gilesii* (Priority 3)
- *Ptilotus luteolus* (Priority 3),
- *Sauropus ramosissimus* (Priority 3),
- *Stackhousia clementii* (Priority 3).

None of the recorded species will be impacted by the Proposal, the closest identified species (*Eremophila congesta*) occurs over 14 km south-east of the Proposal Area.

The biological survey identified a total of 398 flora taxa (including subspecies and varieties) representing 53 families and 154 genera were recorded in the Survey Area. This total comprised 391 (98 %) native taxa and seven (2 %) introduced taxa.

**Fauna:**

A fauna survey was undertaken in November 2013, immediately following the completion of the vegetation and flora surveys (GHD,2013). The fauna survey involved targeted, species-specific survey methods, aimed at identifying and mapping the presence of conservation significant fauna species and suitable habitat. This information was used to inform a likelihood of occurrence assessment for each of the conservation significant fauna species identified in a preliminary desktop assessment. In addition to the targeted survey, GHD ecologists also undertook a Level 1 fauna survey (reconnaissance survey) of the Survey area.

Eight broad fauna habitat types were identified during the survey, the assessment was based on predominant landforms, soil and vegetation structure in the area. The structure and condition of each habitat type varied depending on impact from various disturbances including cattle grazing, fire and past clearing.

Habitat types closely correspond to the vegetation types, two habitat types were mapped within the Clearing Area; Mixed Acacia shrubland (0.56 ha) of medium habitat value and Chenopod shrubland (1.62 ha) considered low habitat value. Fauna habitat identified within the Proposal area was not considered to contain significant habitat that is not represented by better condition habitat in the surrounding region (GHD,2013).

A desktop assessment was completed to identify fauna species with the potential to occur in the Survey area. A total of; four amphibians, 107 birds, 31 mammals and 68 reptiles were identified to have previously recorded near or within the vicinity of the Survey Area.

To supplement the GHD (2013) survey, desktop searches of current (2023) GIS databases were conducted to inform an assesment of variance to Principle a (Figure 3). Current database searches confirmed that no Threatened or Priority Fauna are located within the Proposal Area.

The field survey recorded a total of 31 birds, five mammals and two reptile species within the Survey Area, five introduced fauna species were also observed.

Six conservation significant fauna species that are currently listed in the BC and/or EPBC Act were identified to potentially occur within the Survey area, as listed below:

- *Falco hypoleucos* (Grey Falcon) - Vulnerable BC and EPBC,
- *Falco peregrinus macropus* (Peregrine Falcon) – Specially protected (BC Act),
- *Leipoa ocellata* (Malleefowl) - Vulnerable and (BC and EPBC),
- *Polytelis alexandrae* (Princess Parrot) -Vulnerable (EPBC),
- *Macrotis lagotis* (Greater Bilby) – Vulnerable (EPBC),
- *Liopholis kintorei* (Great Desert Skink)– Vulnerable (EPBC).

Following the field survey, no conservation significant fauna or suitable habitat of conservation significant species were identified within the Proposal Area (GHD, 2013).

Of the listed conservation significant species with the potential to occur within the Proposal Area, the Peregrine Falcon is the closest listed species to the Proposal Area, previously recorded approximately 4 km north of the Proposal Area (DBCA Fauna database). The Peregrine Falcon is considered likely to be an occasional visitor to the Proposal area and may opportunistically utilise the habitat for hunting and dispersal (GHD, 2013).

No Threatened or Priority fauna listed under the EPBC or BC Act were recorded in the Proposal Area during the field survey.

Clearing of vegetation within the Proposal Area is considered to have a minimal impact on fauna species, as no species were assessed to utilise the area exclusively. It is not considered that the clearing of vegetation

will significantly alter the fauna habitat of the region. Disturbance is most likely to occur on a local scale, impacting individual animals, rather than a species (GHD, 2013).

Impacts which may occur to individual animals include:

- Minor loss of habitat and feeding areas. The clearing of 2.18 ha is not considered to be a substantial impact on current extent of habitat.
- Harm/deaths/displacement of individual animals. This may occur during clearing activities, however, is considered unlikely due to the ability of species to egress into directly adjacent areas of suitable habitat.

**Ecological commnuities:**

A desktop search of the DBCA database and EPBC Protected Matters database for Threatened Ecological Communities (TEC) and Priority Ecological Communities (PEC) was undertaken within 30 km of the Proposal area. No TECs were identified, four PECs occur within 30km of the Proposal area. Two PEC buffer areas occur within 3.5km of the Propsal area, these include;

- Paroo Calcrete - Paroo calcrete groundwater assemblage type on Carey palaeodrainage on Paroo Station, and
- Millbillillie Bubble Well Calcrete - Millbillillie Bubble Well groundwater calcrete assemblage type on Carey palaeodrainage on Millbillillie Station.

No vegetation consistent with the PEC communities were identified in the Proposal area following the biological survey (GHD,2013), no impact to these PECs are anticipated to occur.

**The proposed clearing is not at variance to this Principle.**

**Methodology**

- Biological Survey (GHD,2013)
- DCCEEW Protected Matters Search Tool Report
- Department of Natural Resources and Environment (2002)
- Government GIS Shapefiles:
  - DBCA Threatened and Priority Ecological Community database search (November 2022)
  - DBCA Threatened and Priority fauna database search (November 2022)
  - DBCA Threatened and Priority flora database search (November 2022)

## (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 at variance to this Principle.**

**Assessment**

Two native vegetation fauna habitat types were recorded within the Proposal Area during the biological survey, habitat types align with mapped native vegetation associations. Habitat includes: Mixed Acacia shrubland (0.56 ha) of medium value and Chenopod shrubland (1.62 ha) of low value (GHD,2013). These two habitat types are well represented in the immediate vicinity of the Proposal Area and in the broader Murchison region.

Mixed Acacia shrubland is the dominant habitat type within the Proposal Area. A large proportion of this shrubland has been previously disturbed by cattle grazing, resulting in very limited understorey or groundcover vegetation. Areas with minimal disturbance (west of the Proposal Area) with evidence of some structural diversity provide medium habitat value. Habitat within the Proposal Area is Degraded and is not considered quality fauna habitat, in addition this habitat is considered to occur extentively across the Murchison bioregion (GHD, 2013). The clearing of 0.56 ha of this habitat type, majority in degraded condition, will not affect the existance of this habitat on a local or regional scale.

Chenopod shrubland occurs over a small portion of the Proposal Area, described as heavily disturbed with poor vegetation structure and generally associated with flood ways and considered to be of low habitat value (GHD, 2013). This shrubland is common habitat in the Murchison bioregion which tends to be localised and associated with claypans (GHD, 2013). Clearing of 1.62 ha of this habitat will not adversely affect the maintenance of this habitat locally or regionally.

Native vegetation proposed to be cleared (2.18 ha) is generally of medium to low habitat value, no conservation significant fauna species were identified to occur historically within 4 km of the Proposal Area although one predatory bird species, EPBC Act listed Peregrine Falcon may opportunistically utilise habitat within the Proposed Area for hunting and dispersal (GHD, 2013). Each fauna habitat is well represented locally and regionally, 2.18 ha of clearing within the Proposal Area will not impact the maintenance of significant fauna habitat.

**The proposed clearing is not at variance to this Principle.**

**Methodology**

- Biological Survey (2013)
- Government GIS Shapefiles:
  - DBCA Threatened and Priority fauna database search (November 2022)

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

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

**Assessment**

The biological survey and DBCA database search did not identify any flora protected under the BC Act within the Proposal Area.

Twelve DBCA Priority listed flora were recorded within 20 km of the Proposal Area. DBCA priority category species with closest known record are listed below.

| DBCA PRIORITY | SPECIES | DISTANCE FROM PROPOSAL AREA |
|---|---|---|
| P1 | *Seringia exastia* | 4.6 km north-east |
| P1 | *Eremophila congesta* | 14 km south-east |
| P3 | *Homalocalyx echinulatus* | 4.4 km north-east |
| *P1* | *Stackhousia clementii* | 17.5 km south-east |
| *P4* | *Goodenia berringbinensis* | 7.5km south-east |
| *P3* | *Goodenia modesta* | 5.4 km north |
| *P1* | *Hibiscus sp. Perrinvale Station* | 19 km south |
| *P3* | *Indigofera gilesii* | 5.8 Km north-east |
| *P3* | *Prostanthera ferricola* | 17.5 km |
| *P3* | *Thryptomene sp. Leinster* | 3.8 km north-east |
| *P3* | *Tribulus adelacanthus* | 18.8 km south |
| *P3* | *Vittadinia pustulata* | 8.4 km south-east |

There are no known records of priority flora within the Proposal Area, no priority flora listed above, or conservation significant species protected under the EPBC Act were identified within the proposal area during the GHD 2013 field survey. Clearing is not likely to impact the continued existence of threatened flora.

**The proposed clearing is not at variance to this Principle.**

**Methodology**

- Biological Survey (2013)
- Government GIS shapefiles:
  - DBCA Threatened flora database search (Accessed November 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.**

**Assessment**

An EPBC protected matters database search was completed to identify known TECs within 20 km of the proposal area. No TECs were identified to occur within the search area and no vegetation surveyed (GHD, 2013) was considered to be representative of a TEC.

**The proposed clearing is not at variance to this Principle.**

**Methodology**

- Biological Survey (2013)
- Community specific conservation listing advice and recovery plans
- Government GIS shapefiles:
  - DBCA Threatened Ecological Community database search (November 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.**

**Assessment**

The Proposal Area is not located within a "constrained area". Vegetation Association number 204 has over 98% pre-European vegetation remaining within the State, IBRA region or sub-region and LGA levels.

The clearing of up to 2.18 ha of native vegetation will not significantly reduce the mapped extent or percent remaining for vegetation association number 204.

The proposed work involves widening of unsealed shoulders and construction of drainage features parallel to the existing Goldfields Highway in an area which is previously disturbed. The vegetation within the Proposal Area is well represented locally and regionally and is not considered significant as a remnant of native vegetation, as summaried in the Table 5 and Table 6 below.

**Table 5 Summary of Project Area's Mapped Pre-European Vegetation Association**

| Pre-European Vegetation Association(s) | Clearing Description | Vegetation Condition | Comments |
|---|---|---|---|
| Vegetation Association 204" Succulent steppe with open scrub, scattered mulga and *Acacia sclerosperma* over saltbush and bluebush" | Clearing of up to 2.18 ha for drainage | Very Good to Excellent | Vegetation description and condition determined from GHD, 2013 Biological survey and (Keighery, 1994) |

**Table 6 Pre-European Vegetation Representation**

| Pre-European Vegetation Association | Scale | Pre–European (ha) | Current Extent (ha) | %Remaining | % Remaining in DBCA reserves |
|---|---|---|---|---|---|
| **Veg Assoc No.** 204 | **Statewide** | 199,475.40 | 198,735.09 | 99.62 | 6.77 |
| | **IBRA Bioregion** Murchison | 185,601.67 | 184,861.36 | 99.60 | 7.26 |
| | **IBRA Sub-region** Eastern Murchison | 75,042.26 | 74,305.79 | 99.02 | 11.47 |
| | **Local Government Authority** | | | | |
| | MEEKATHARRA, SHIRE OF | 67757.02 | 67754.55 | 100 | 12.70 |
| | WILUNA, SHIRE OF | 39116.93 | 38380.47 | 98.12 | - |

Vegetation proposed to be cleared is well represented at a local and regional scale and is not considered to be significant remnant vegetation.

**The proposed clearing is not at variance to this Principle.**

**Methodology**

- Biological Survey (2013)
- Government GIS shapefiles
  - Pre-European vegetation (November 2022)
  - Statewide Vegetation Statistics (Government of Western Australia 2018)

## (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 not at variance to this Principle.**

**Assessment**

Drainage lines were observed during the biological survey (GHD, 2013) intersecting the road corridor outside of the Proposal Area (approximately SLK 749.0 - 753.6). These drainage lines are only likely to flow following periods of heavy rain. Surface sheet flow will occur on the flat plains. The Proposal Area is located between SLK 642-647, therefore vegetation associated with the identified watercourses will not be impacted by the proposed clearing.

No drainage lines or vegetation associated with wetlands or watercourses were identified during the survey to occur within the Proposal Area or be impacted by proposed clearing.

Two named watercourses; Bubble Creek system and the Kutkububba creek system were noted to occur to the east of the Proposal Area over 25 km away (GHD, 2013). The proposed clearing works will not impact either creek system.

An EPBC protected matters search did not identify any Wetlands of International Importance (i.e. RAMSAR wetlands) or Nationally Important Wetlands within 20 km of the Proposal area. The closest wetland of noted importance, Lake Annean (Lake Nannine) is located approximately 150 km south-west of the Proposal Area.

No significant surface water features occur within or adjacent to the Proposal Area. The proposed works will not result in clearing of vegetation growing in, or in association with, a watercourse or wetland.

**The proposed clearing is not at variance to this Principle.**

**Methodology**

- Biological Survey (2013)
- Government GIS shapefiles:
  - DBCA database DBCA-045 - Directory of Important Wetlands in Australia - WA (November 2022)
  - DBCA database DBCA-010 - Ramsar Sites Geomorphic Wetlands (November 2022)

## (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.**

**Assessment**

The Proposal Area is located within the Salinaland Plains zone of the Murchison Province Soil–Landscape Zones. The Salinaland Plains zone is characterised by Sandplains on granitic rocks of the Yilgarn Craton. The soils consists of red sandy earths with some red brown hardpan shallow loams, salt lake soils and red shallow sandy duplexes (GHD, 2013).

Clearing of up to 2.18 ha of vegetation is not expected to substantially increase runoff or sedimentation, when approximately 30% of the Proposal area is in an existing degraded state and devoid of vegetation.

The CSIRO ASRIS Acid Sulfate Soils Database indicates an extremely low risk of acid sulphate soils within the Proposal Area and surrounds. The proposed works are not anticipated to have an impact on soil acidity.

Proposed works are intended to only alter drainage and surface water flows locally. Surface flows will be directed to existing flood ways and are not anticipated to lead to increased erosion or degradation as a consequence of the works.

Management measures will be implemented as part of the construction design and management requirements to monitor and maintain drainage and existing flow lines to avoid degradation to the natural surroundings.

Proposed works will be undertaken under standard MRWA environmental management requirements to ensure operational controls are implemented to minimise and avoid the risk of land degradation from all project related activities including clearing.

**The proposed clearing is not likely to be at variance to this principle.**

**Methodology**

- Biological Survey/Wetland Field Assessment (2013)
- Government GIS Shapefiles:
  - Acid Sulphate Soil Risk Map (Accessed November 2022)

## (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.**

**Assessment**

A desktop assessment did not identify any listed or proposed nature or conservation areas within 40 km of the Proposal Area.

The closest declared area with any known environmental conservation value (Wanjarri Nature Reserve) is located over 100 km south-east of the Proposal Area.

No impact to known or proposed conservation reserves/areas or features are anticipated.

**The proposed clearing is not at variance to this Principle.**

**Methodology**

- Biological Survey (2013)
- Government GIS Shapefiles:
  - DBCA (DBCA-011) Legislated Lands and Waters (November 2022),
  - DBCA (DBCA-045) Directory of Important Wetlands in Australia - WA (November 2022),
  - DBCA (DBCA-010) Ramsar Wetlands (November 2022),
  - Landgate (LGATE-227) Reserves (July 2023)

## (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 at variance to this Principle.**

**Assessment**

The Proposal Area is located in the East Murchison Groundwater Area, proclaimed under the RIWI Act.

The proposal does not occur within any Public Drinking Water Source Areas.

No impact to drinking water source areas is likely to occur, any abstraction of groundwater is only to be undertaken under licence under the RIWI Act. All licences for the abstraction of groundwater are to be obtained prior to commencing works.

No watercourses are located within or adjacent to the Proposal Area. The closest drainage feature is a over 4 km north of the Proposal Area. The identified drainage feature flows in a south-eastern direction to a salt lake (Lake Way) located approximately 42 km southeast of the Proposal Area. Proposed works will not impact the water quality within the identified feature.

A EPBC Act Protected Matters search did not identify any Wetlands of International Importance (i.e., RAMSAR wetlands) within 20 km of the Proposal Area. The closest wetland of noted importance, Lake Annean (Lake Nannine) is located approximately 150 km south-west of the Proposal Area. No wetlands of importance will be impacted by the proposed works.

No vegetation communities within the Proposal Area have values associated with wetland or dampland vegetation. No riparian vegetation was identified during the field survey (GHD 2013).

Clearing within the Proposal Area is unlikely to cause deterioration in the quality of surface and/or underground water.

**The proposed clearing is not at variance to this Principle.**

**Methodology**

- Biological Survey (2013)
- Government GIS Shapefiles:
  - RIWI Act, Surface Water Areas and Irrigation Districts (November 2022)
  - RIWI Act, Groundwater Areas (November 2022)
  - Public Drinking Water Source Areas (November 2022),
  - DBCA Directory of Important Wetlands in Australia - WA (November 2022),
  - DBCA Ramsar Wetlands (November 2022),
  - DBCA legislated lands and waters (July 2023),

## (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 at variance to this Principle.**

**Assessment**

The Meekatharra-Wiluna area experiences low rainfall and ephemeral surface drainage. The topography of the Proposal Area is typically flat, and forms part of a broad watershed on the interior plateau of Western Australia. The Proposal Area and surrounds consist of mostly extensive plains with low hill ranges and plateaux (GHD,2014).

The climate between Meekatharra and Wiluna is described as semi-arid and experiences high summer temperatures, highly erratic rainfall (average 247 mm per year) between January to June with very high evaporation rates (x10 rainfall) (GHD, 2014).

The soils of the Proposal Area are leached in nature and have widespread siliceous hard-pan or "cement". Leached course-grained red earths and red sands are the most extensive soils and are mainly derived from weathered rock on the old plateau (GHD,2014).

Rainfall within the region is unreliable, drainage lines are predominantly ephemeral and no permanent wetlands occur within the Proposal Area. Minor surface sheetflow occurs on the flat plains, the proposed works are aimed to facilitate the direction of flows away from the road alignment. The incidence or intensity of flooding is not likely to be increased due to the proposed clearing of native vegetation.

**The proposed clearing is not at variance to this Principle.**

**Methodology**

- Biological Survey (2013)
- EIA and Managemnt Plan (GHD, 2014)
- Government GIS Shapefiles:
  - DWER (DWER-031) Hydrography Linear (Hierarchy) (November 2022).

# 6 REHABILITATION, REVEGETATION & OFFSETS

## 6.1 Revegetation and Rehabilitation

No temporary clearing will be undertaken as part of the Proposal activities.

## 6.2 Offset Proposal

No offset proposal is required as the proposed clearing will not result in significant residual impacts to native vegetation within the region.

# 7 COMPLIANCE WITH CPS 818

The clearing associated with the proposal is not likely to be, or is not at variance with the Clearing Principles. Additional management actions under CPS 818 are detailed in Table 5.

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

| Impact of Clearing | Yes/No or NA | Further Action Required |
|---|---|---|
| **1.** The CDR indicates that the clearing is 'At Variance' or 'May be at Variance' with one or more of the Clearing Principles. | **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.** Clearing is at variance with Clearing Principle (g) land degradation, (i) surface or underground water quality **and** (j) the incidence of flooding. | **No** | No further action required. |
| **4.** The Proposal involves clearing for temporary works (as defined by CPS 818). | **No** | No further action required. |

| Impact of Clearing | Yes/No or NA | Further Action Required |
|---|---|---|
| **5a.** Proposal is within a Region that:<br>• has rainfall greater than 400mm; and,<br>• is South of the 26th parallel; and,<br>• works are necessary in 'Other than dry conditions'; and,<br>• works have potential for **uninfested** areas to be impacted. | **No** | Standard Vehicle and Plant management actions from Principal Environmental Management Requirements (PEMRs) and Hygiene Checklists will be applied |
| **5b.** Do the proposed works require clearing within or adjacent to DBCA managed lands in non-dry conditions? | **No** | No further action required. |
| **6.** 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. |
| **7.** Weeds are 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>CEMP requires that all vehicles and machinery arrive on site clean and that weed infested mulch is removed from site, therefore there is a low risk of weed spread. |
| **8.** Did an environmental specialist conduct the survey or field assessment? | **Yes** | The Environmental Specialist undertaking the biological assessments was suitably qualified and had more than three years' experience. |

| Impact of Clearing | Yes/No or NA | Further Action Required |
|---|---|---|
| **9.** Did an environmental specialist prepare the Assessment Report and any other associated documentation including the VMP, Dieback Management Plan or Offset Proposal? | **Yes** | The Environmental Specialist preparing the Assessment Report and any other associated documentation including the VMP, Dieback Management Plan or Offset Proposal was suitably qualified and had more than three years' experience. |

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# 9 APPENDICES

## Appendix 1: Vegetation within Proposal Area


**Figure 2.1 Vegetation within Proposal Area**

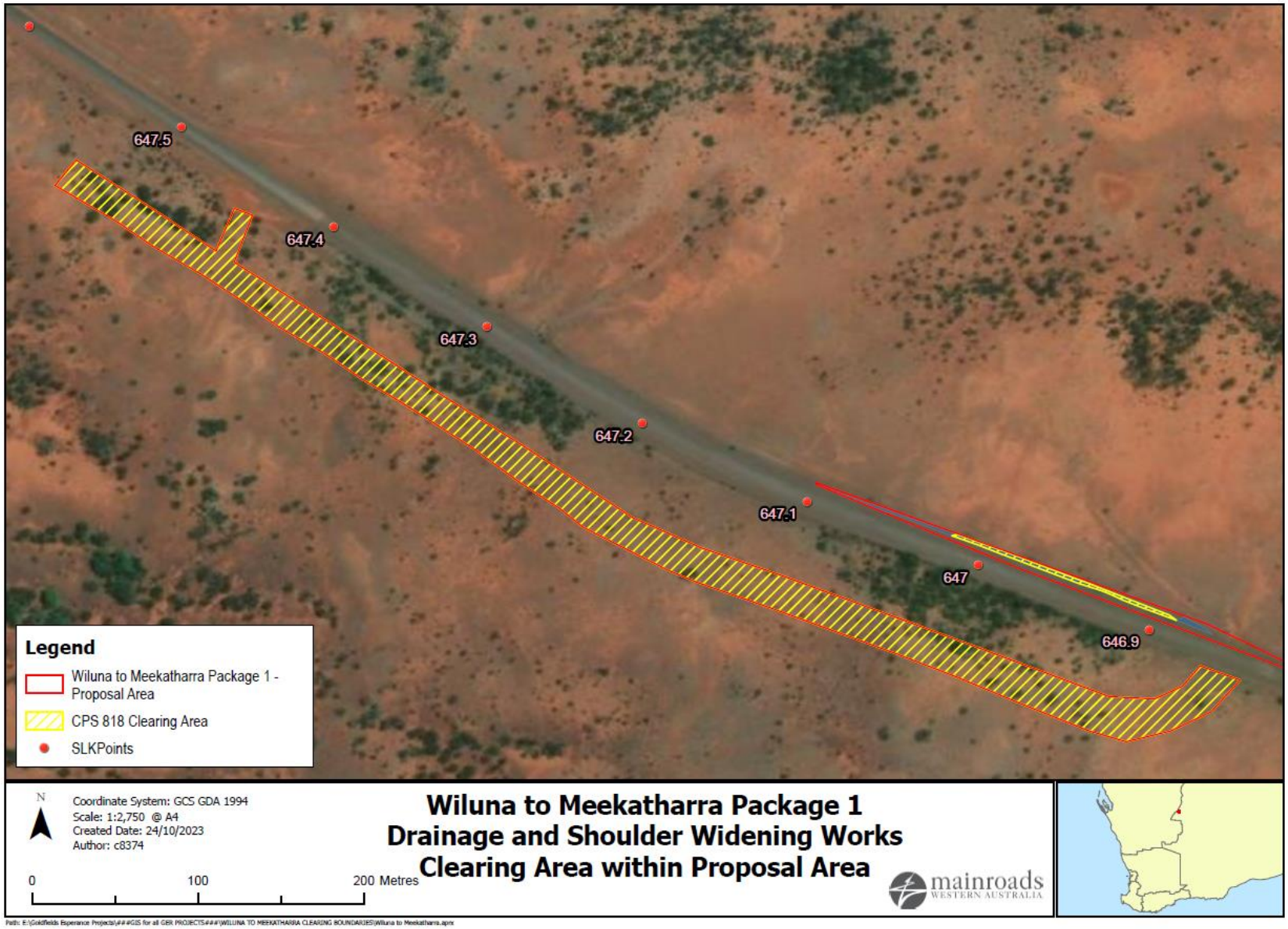


**Figure 2.2 Vegetation within Proposal Area**

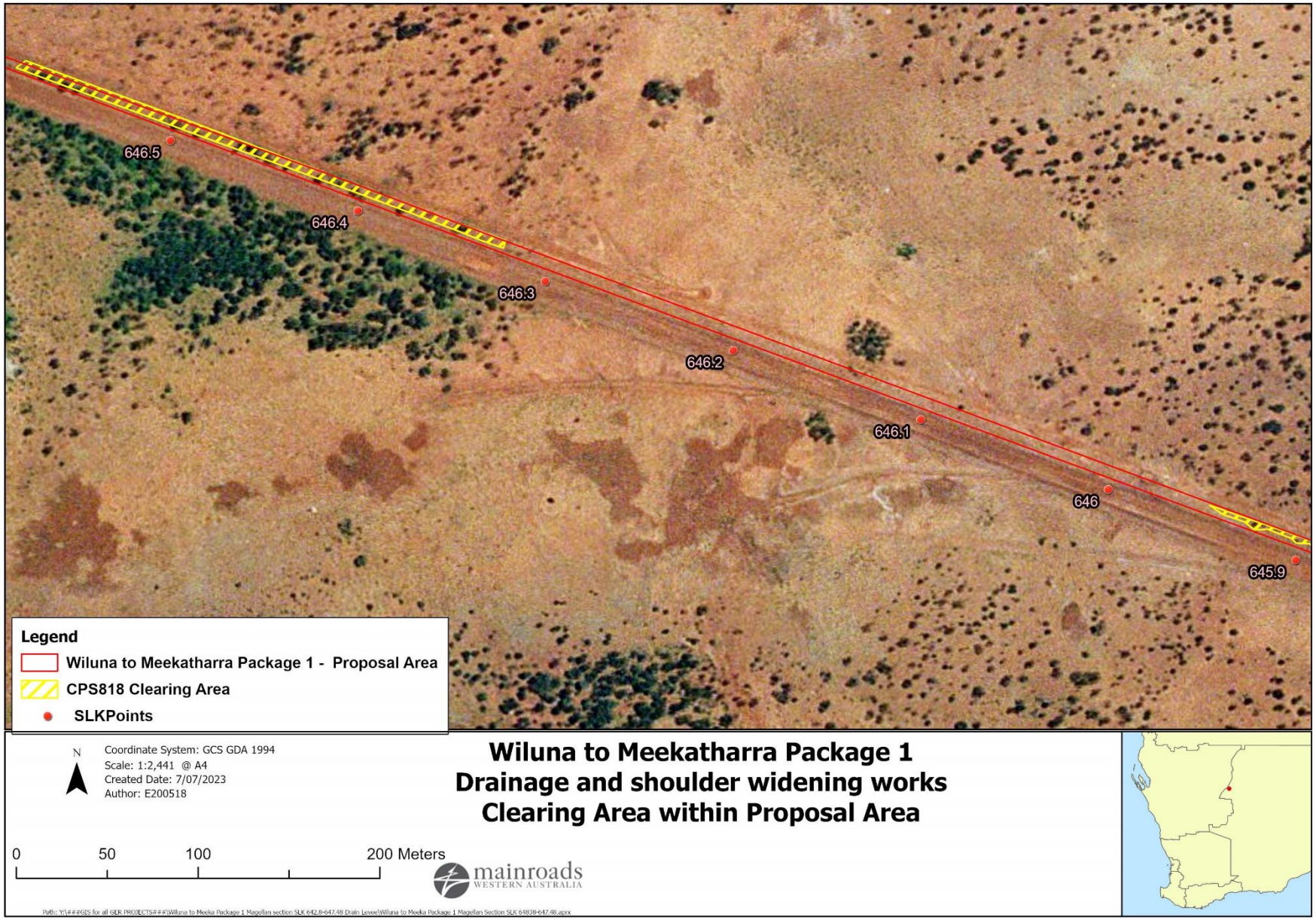


**Figure 2.3. Vegetation within Proposal Area**

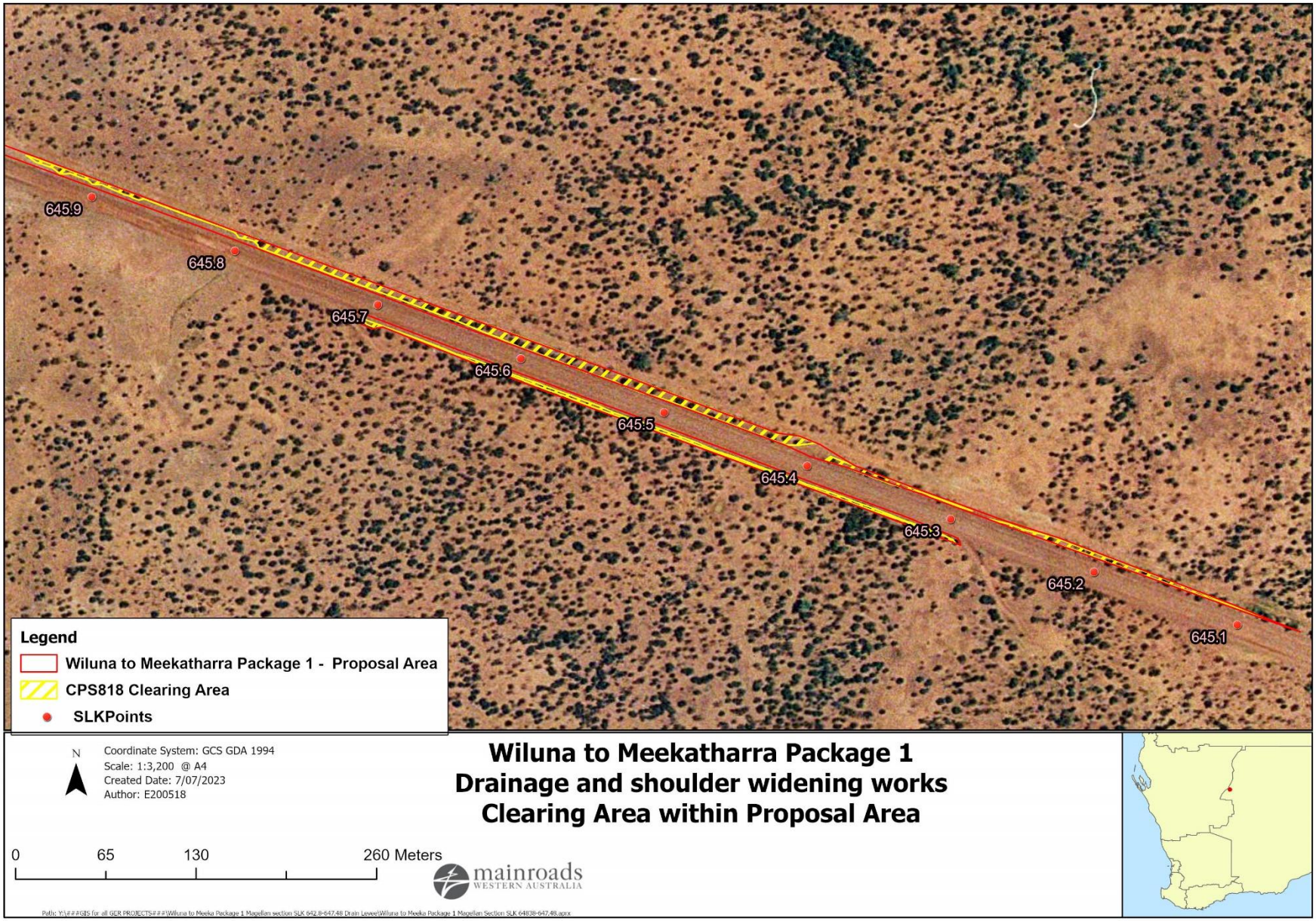


**Figure 2.4. Vegetation within Proposal Area**

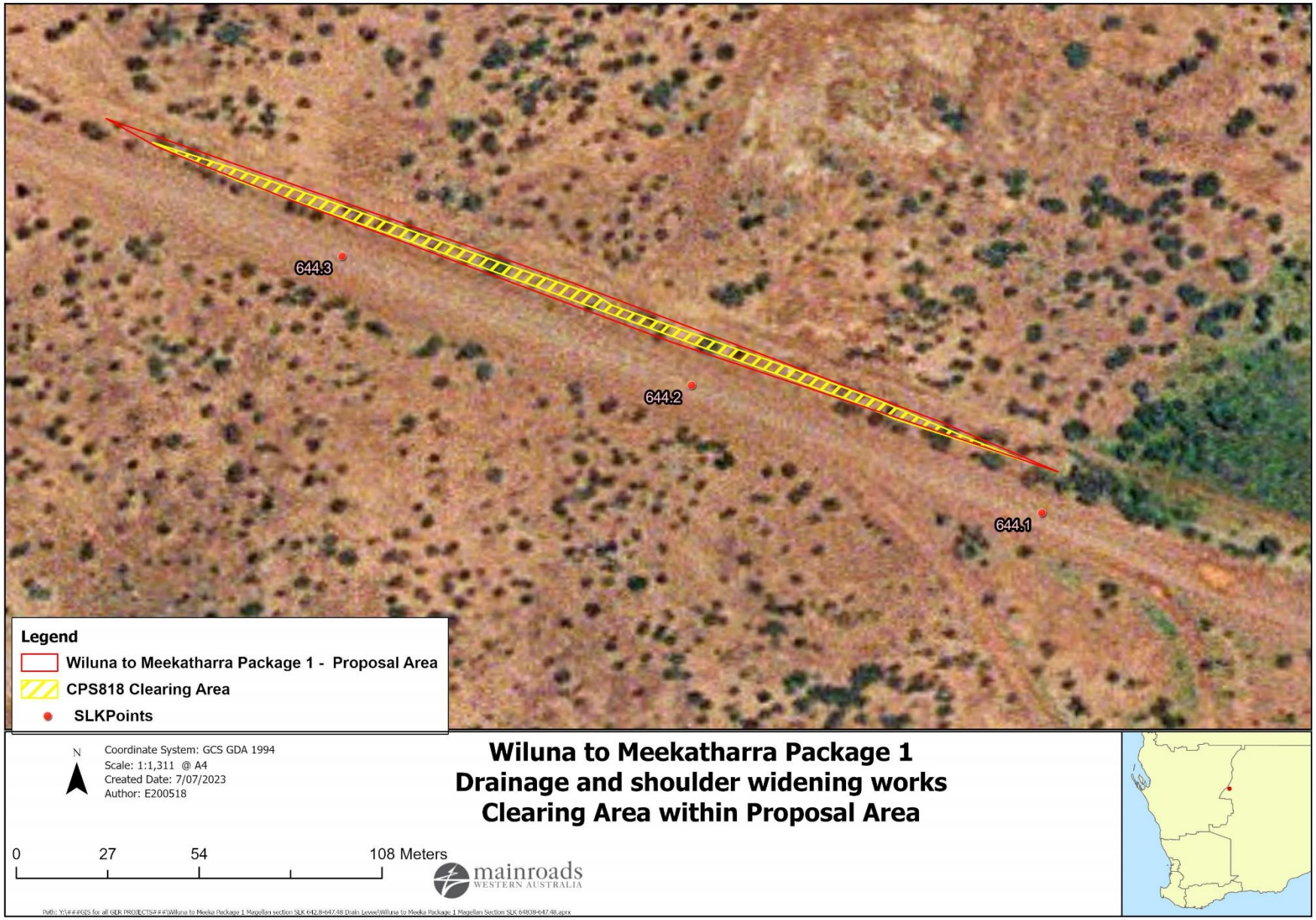


**Figure 2.5. Vegetation within Proposal Area**

## Appendix 2: DBCA Threatened Flora/ Fauna/Ecological Communities Database Search

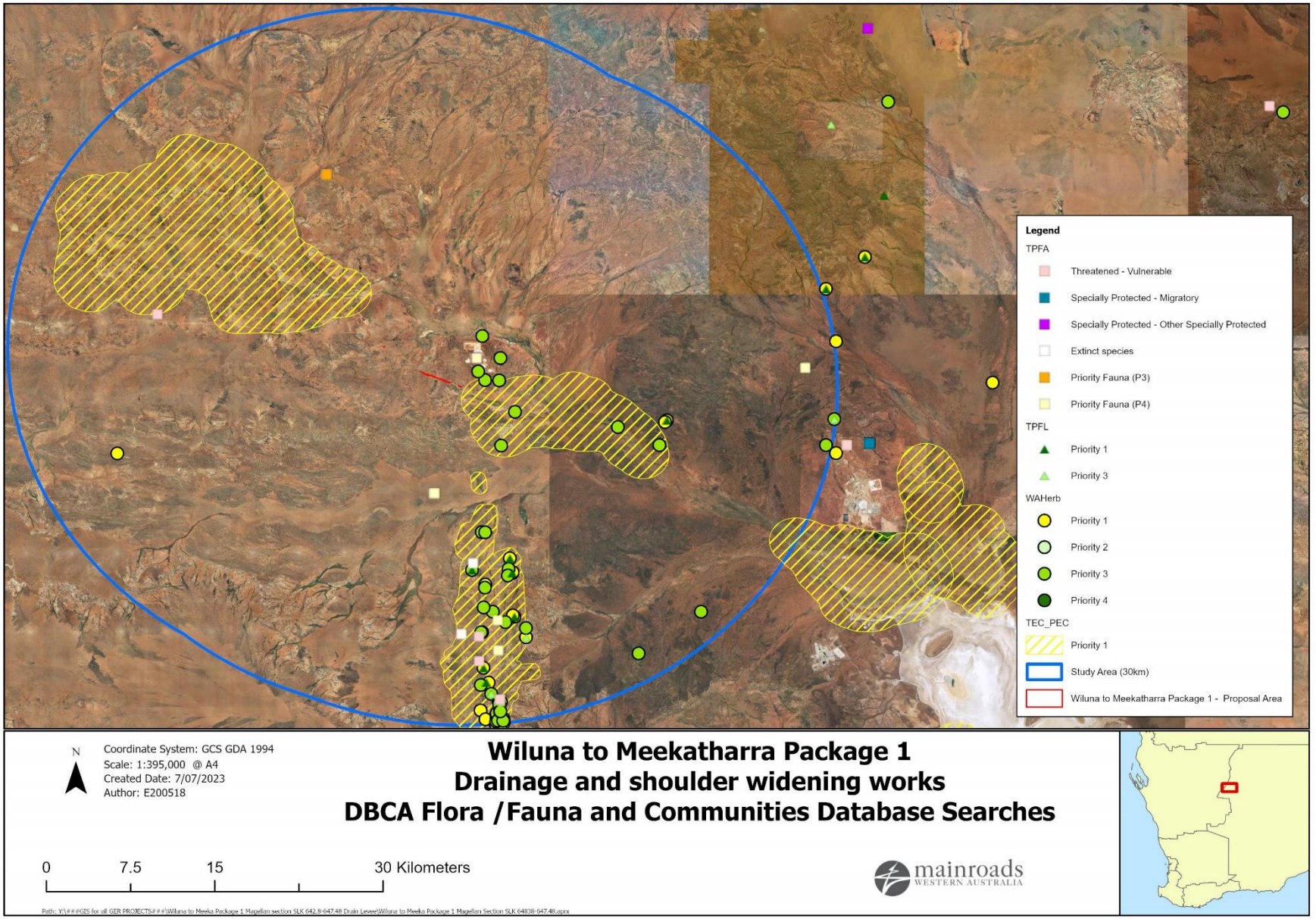


**Figure 3 Environment Constraints Map**

## Appendix 3: Principal Environmental Management Requirements (PEMR's)

## Table 1: Clearing PEMR

**STANDARD MANAGEMENT ACTIONS**

| STANDARD MANAGEMENT REQUIREMENTS |
|---|
| **PRE WORKS**<br>1. The Contractor must prepare, implement and maintain processes to ensure that the movement of all vehicles, plant and machinery does not occur outside of the Limits of Vegetation Clearing. This must include all turnaround areas.<br>2. The Contractor must minimise vegetation clearing and the area of disturbance on ground by utilising existing cleared area where possible. |
| **DURING WORKS**<br>1. The Contractor must report any damage to vegetation beyond the Limits of Vegetation Clearing as an Environment Incident.<br>2. The Contractor must ensure Movements are confined to the Limits of Vegetation Clearing during the works.<br>3. The Contractor must undertake the clearing in accordance with the Fauna PEMR. |
| **POST WORKS**<br>1. NIL |

## Table 2: Weed and Hygiene PEMR

**STANDARD MANAGEMENT ACTIONS**

| STANDARD MANAGEMENT REQUIREMENTS |
| --- |
| **PRE WORKS**<br>1. Prescribe where vehicles, machinery and plant are going to be stored/parked during the works.<br>2. Use the Plant, Vehicle and Equipment Hygiene Checklist or equivalent Hygiene form to check that all machinery and vehicles are clean on entry (i.e. free of soil and vegetation). |
| **DURING WORKS**<br>1. Restrict movement of machines and other vehicles to the Limits of Vegetation Clearing.<br>2. Ensure no known weed affected soil, mulch, fill or other material is brought into the Limits of Vegetation Clearing.<br>3. Ensure cleared materials are stockpiled or disposed at waste at the locations approved by the Superintendent. |
| **POST WORKS**<br>1. Use the Plant, Vehicle and Equipment Hygiene Checklist to check that all machinery and vehicles are clean on exit (i.e. free of soil and vegetation). |

## Table 3: Erosion and Sedimentation

**PRE WORKS**

1. The Contractor must develop, implement and maintain processes and procedures to ensure that:
   - The Contractor is responsive to and addresses incidents of erosion and sedimentation within and adjacent to the work areas.
   - Prevent water and wind soil erosion within and adjacent to the works areas.
   - Prevent the sedimentation and siltation of watercourses located within and adjacent to the works area.
   - Ensure that sedimentation and siltation of drainage lines due to the removal of riparian vegetation is avoided, minimised and mitigated.
   - Ensure that loose surfaces and recently cleared areas are protected from wind and soil erosion.
   - Minimise exposed soil working surfaces or protect them from stormwater erosion.
   - Ensure material such as gravel, crushed rock and excavated material is stockpiled away from drainage paths and covered to prevent erosion.
   - Ensure that water quality monitoring is undertaken when turbidity and sedimentation is an issue.

**DURING WORKS**

1. Implement, monitor and adhere to the sedimentation and erosion processes developed to address the requirements in the pre-works.

**POST WORKS**

1. If required, the Contractor must continue to monitor water quality until the turbidity/sedimentation dissipates.
2. The Contractor must ensure that disturbed areas are stabilised as soon as is practicable after construction activities are completed.

## Table 4: Fauna

**PRE WORKS**

1. The Contractor must ensure that fauna management requirements are communicated to the crew undertaking the clearing works during the induction and pre-start meeting.
2. Where active nests, burrows or dens are identified, works must not proceed until the Contractor obtains the Superintendents approval of the management of active nests, burrows or dens adheres to the Superintendents advice.

**DURING WORKS**

1. The Contractor must undertake the clearing in the following manner to allow fauna to move out of the clearing area;
   i. Prior to the clearing activities commencing, use machinery to tap large trees with habitat hollows to encourage any animals to evacuate.
   ii. Undertake the clearing in one direction and towards areas of native vegetation to allow the animals to escape to adjacent habitat.
2. The Contractor must ensure that all onsite personnel undertake visual monitoring and are vigilant to the presence of fauna. Any sightings of fauna, including injury or fatality, must be reported as an Environmental Incident.
3. The Contractor must ensure that;
   i. No pets, traps or firearms are brought into the project area.
   ii. Fauna are not fed
   iii. Fauna are not intentionally harmed or killed
   iv. Fauna that venture into the work area are encouraged to leave in a manner that does not harm the animal or operator (loud noise, slowly approaching in a vehicle etc.)
4. The Contractor must ensure that in the event that sick, injured or orphaned native wildlife are located on the project site, the WILDCARE Helpline ((08) 9474 9055) will be contacted for assistance. The Contractor must maintain records of any animal taken to a wildlife carer.

**POST WORKS**

1. The Contractor must provide any records of fauna impact to the Superintendent.

## Table 5: Machinery and Vehicle Management

| |
|---|
| **PRE WORKS**<br>1. The Contractor must ensure that all areas associated with the storage, parking, servicing, wash down and refuelling of all vehicles, plant and machinery is located within the Limits of Clearing and approved by the Superintendent.<br>2. The Contractor must ensure that all vehicles, machinery and plant are clean on entry (i.e. free of all soil and vegetation material) and comply with the requirements of 204.B.32.<br>3. The Contractor must ensure that vehicle servicing and refuelling will be undertaken at designated areas approved by the Superintendent.<br>4. The Contractor must ensure that all staff suitably qualified and competent to undertake works, especially refuelling activities. |
| **DURING WORKS**<br>1. The Contractor must maintain records of checking all vehicles, machinery and plant are clean on entry. |
| **POST WORKS** |

## Table 6: Mulch and Topsoil Management

| |
|---|
| **PRE WORKS**<br>1. The Contractor must ensure that poor quality topsoil and mulched vegetation does not contaminate the good quality topsoil and vegetation. |
| **DURING WORKS**<br>1. The Contractor must ensure that all machinery used in the removal of weed-infested topsoil must be cleaned down before and between operations to prevent the introduction and spread of weeds.<br>2. The Contractor must ensure the movement of large equipment over topsoil materials is avoided to minimise compaction.<br>3. The Contractor must ensure that weed infected topsoil and mulch vegetation must be handled separately to minimise the risk of spreading weed species across the site and stockpiles.<br>4. The Contractor must ensure that stockpiling operations must occur in a manner to ensure that the properties of the topsoil are not degraded and the topsoil made unsuitable for use in revegetation. |
| **POST WORKS** |

## Table 7: Pegging and Flagging

| |
|---|
| **PRE WORKS**<br>1. Pegging must be done in accordance with the requirements detailed in Specification 301.<br>2. The Contractor must clearly communicate, either at the pre-start meeting or equivalent, to the crew undertaking the clearing works, through clear maps and other additional means, what the Pegging represents. |
| **DURING WORKS**<br>1. The Contractor must peg the Limits of Clearing by PINK flagging tape.<br>2. The Contractor peg/demarcate vegetation proposed to be retained is demarcated by WHITE flagging tape.<br>3. The Contractor must ensure that the vegetation demarcated with PINK and WHITE flagging tape is consistent with the approved clearing areas. |
| **POST WORKS**<br>1. The Contractor must remove and dispose of appropriately any demarcation, pegging or flagging once project works are completed. |

## Table 8: Water Drainage

| |
|---|
| **PRE WORKS**<br>1. Use pollution control and containment strategies for project activities in Public Drinking Water Source Areas (PDWSAs) / Underground Water Pollution Control Areas (UWPCAs) and liaise with the DWER where necessary |
| **DURING WORKS**<br>1. Existing natural drainage paths and channels along the road or the vicinity of the project area will not be unnecessarily blocked or restricted.<br>2. Temporary drainage systems may be installed to carry surface water away from the areas where excavation and foundation construction work is taking place or from any other area where the accumulation of water could cause delay or damage to the work.<br>3. Maintain these drainage systems in proper working order at all times.<br>4. Runoff from disturbed areas must be managed to minimise adverse impacts on surrounding vegetation, watercourses and properties.<br>5. Booms and silt fences must be used when working over or adjacent to areas of surface water in order to protect the quality of surface water from construction impacts. |
| **POST WORKS**<br>1. Water quality monitoring to be undertaken (if turbidity/ sedimentation is an issue).<br>2. Prior to backfilling the completed pipe work certify that the entire system is flushed clean and tested.<br>3. Disturbed areas will be stabilised soon after construction activities are completed.<br>4. Culvert and drainage structures will be free of all grass, weeds, silt and debris. |

## Table 9: Weed Management

**PRE WORKS**

1. The Contractor must remove or kill any weeds growing in the project area that are likely to spread and result in environmental harm to adjacent areas of native vegetation that are in good or better condition.
2. The Contractor must develop, implement and maintain procedures to identify and control declared and invasive weed species within the Contract areas, to the satisfaction of the Superintendent.
3. The Contractor must prepare a weed control program, for nominated weed species for control and disposal, to the satisfaction of the Superintendent.
4. The Contractor must undertake weed management in Stockpiles as directed by the Superintendent.

**DURING WORKS**

1. The Contractor must implement the weed control procedures and management plan and record and manage records of its implementation.
2. The Contractor must treat nominated weed infestations as many times as necessary to control and eradicate the weed species in accordance with the approved weed control program.
3. The contractor must ensure that no known weed, pest or diseased affected soil, mulch, fill or other material is brought into the Site.

**POST WORKS**

1. The relevant Vegetation Maintenance Record Sheets available at: https://www.mainroads.wa.gov.au/BuildingRoads/Contracting/Pages/ReportingForms.aspx must be completed and sent to the Superintendent.