Clearing Assessment Report – CPS 818

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Goldfields Hwy Material Pits SLK [REDACTED]
Goldfields Highway H049
Goldfields-Esperance Region
2503

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Contents

List of Tables

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1 PROPOSAL

1.1 Purpose and Justification

This proposal is for material investigation, excavation and extraction at three material pit sites for the purpose of road construction for future project works within Goldfields-Esperance Region. Initial investigations will inform the final size and location of each material pit area, the pit area will allow for stockpiling of vegetation, topsoil, gravel and truck turnarounds. The use of existing (and ongoing maintenance) of access tracks to allow transport of material between material pits and Goldfields Hwy is also included in this proposal.

The proposed material pit and access track disturbance area is to be contained within the Proposal Area boundary of 300 hectares (ha), as shown in spatial data presented as Figure 1.

Goldfields Highway is a strategic freight and inter-town route. The efficiency and reliability of the Highway is vital to the mining and agricultural sectors of the Goldfields-Esperance and Mid-West Gascoyne regions. Having readily available access to quality road construction materials is vital to the maintenance and upgrade of the State Road networks in the Goldfields Esperance region.

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 use a D9 or D10 bulldozer to progressively clear vegetation, stockpile vegetation and topsoil materials, and extract and stockpile gravel/ road construction material within the Proposal Area. Suitable road construction material will be stockpiled ready for use on Goldfields Hwy projects located between Menzies and Leonora.

No processing or screening of material extracted from pit areas will be undertaken as part of this Proposal.

Access to the Pit areas will be maintained via the existing access haul roads accessible for Goldfields Highway SLK [REDACTED].

The clearing of up to 245.4 hectares (ha) of native vegetation (clearing area) within a 300 ha Proposal Area is proposed as part of these works. The clearing of native vegetation will be undertaken progressively as required utilising Main Roads' State-wide Clearing Permit, CPS 818/15. Clearing will be managed to ensure CPS 818 Goldfields Region clearing limits are not exceeded annually. Clearing will be limited to 50 ha per annum to reduce annual regional impact and ensure compliance.

Each material pit will be cleared progressively with vegetation and topsoil stockpiled for rehabilitation purposes. Material pit area will be rehabilitated after (but no longer than 24 months following) suitable materials have been exhausted from within each material pit area.

1.3 Proposal Location

The Proposal area is located on Goldfields Highway (H049) SLK [REDACTED], between Menzies and Leonora, Shire of Menzies as shown in Figure 1.

1.4 Clearing Details

Proposed clearing to be undertaken using CPS 818 (clearing area):
245.4 ha

Areas of Native Vegetation Clearing:

The areas of native vegetation to be cleared are shown in

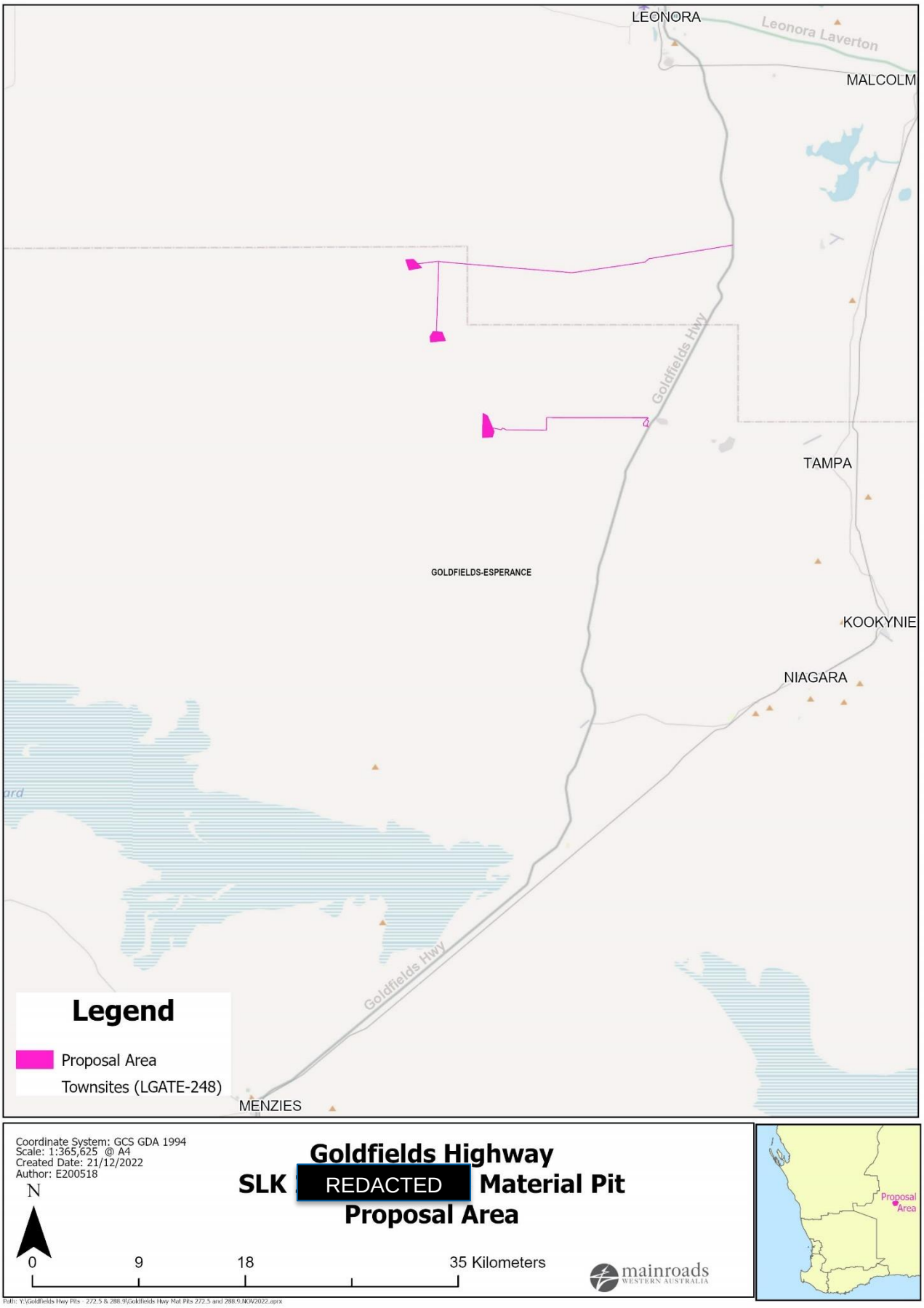

Figure 2. Proposal Area location Map

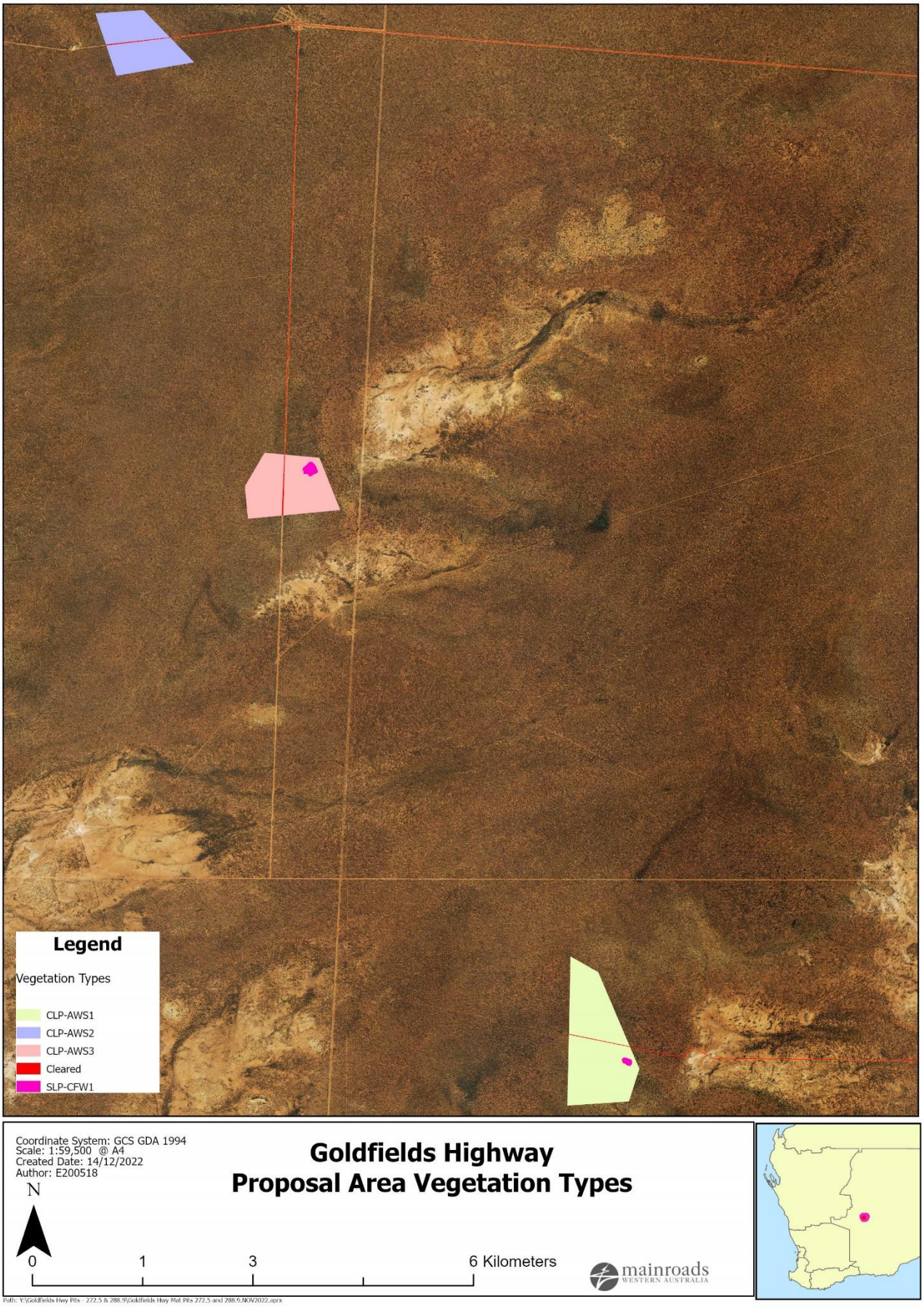

Figure .

Type of Native Vegetation:

Four vegetation codes were identified within the Proposal Area within the two major vegetation groups; Mallee Woodlands and Shrublands (MVG 14) and Callitris Woodlands and Shrublands (MVG 7).

Three vegetation codes are associated with MVG 14 which include;

CLP-AFW1 - *Eucalyptus websteriana* sparse woodland over *Acacia aneura*, *A. mulganeura* and *A. ramulosa* tall open woodland over *Eremophila forrestii*, *E. latrobei* and *Micromyrtus flaviflora* shrubland over *Eragrostis eriopoda*, *Aristida contorta* and *Sida calyxhymenia* sparse grassland/forbs

CLP-AFW2 - *Eucalyptus websteriana* sparse woodland over *Acacia aneura*, *A. lasiocalyx* and *A. ramulosa* tall shrubland over *Eremophila forrestii*, *E. homoplastica* and *Exocarpos sparteus* shrubland over *Eragrostis eriopoda* and *Monachather paradoxus* sparse grassland/forbs

CLP-AFW3- *Eucalyptus youngiana* and *E. leptopoda* subsp. *elevata* sparse woodland over *Acacia caesaneura*, *A. mulganeura* and *A. quadrimarginea* tall open shrubland over *Eremophila forrestii*, *E. homoplastica* and *Thryptomene decussata* open shrubland

One vegetation code, SLP-CWS1, is associated with MVG 7, described as;

Callitris columellaris, *Acacia mulganeura* and *Grevillea stenobotrya* woodland over *Acacia ramulosa*, *Eremophila georgei* and *Senna artemisioides* subsp. *filifolia* open shrubland over *Olearia stuartii*, *Thryptomene costata* and *Rhagodia eremaea* low open shrubland

Figure 3 displays the four vegetation codes that occur within the Proposal Area.

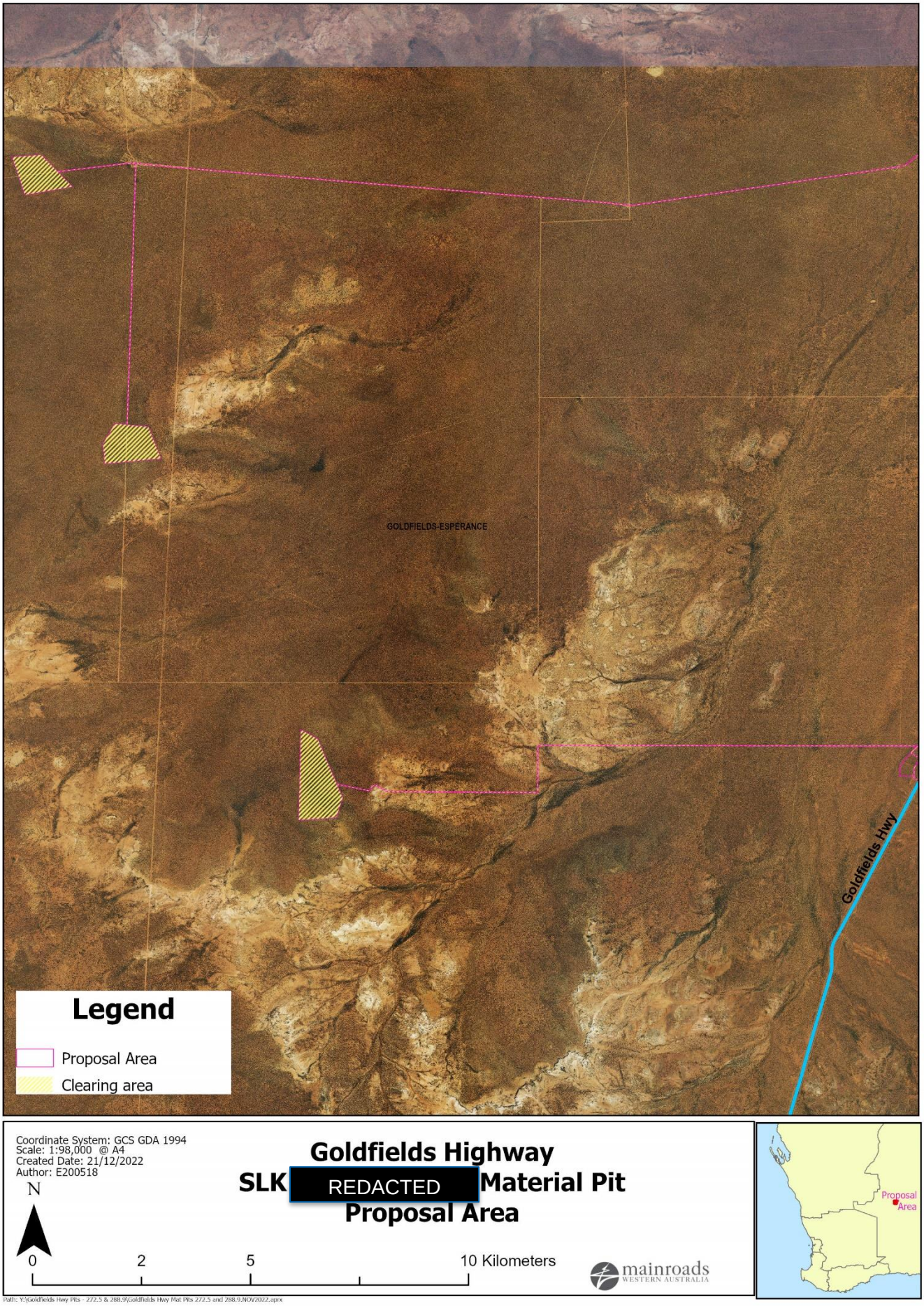

Figure 1. Clearing Area/Development Envelope

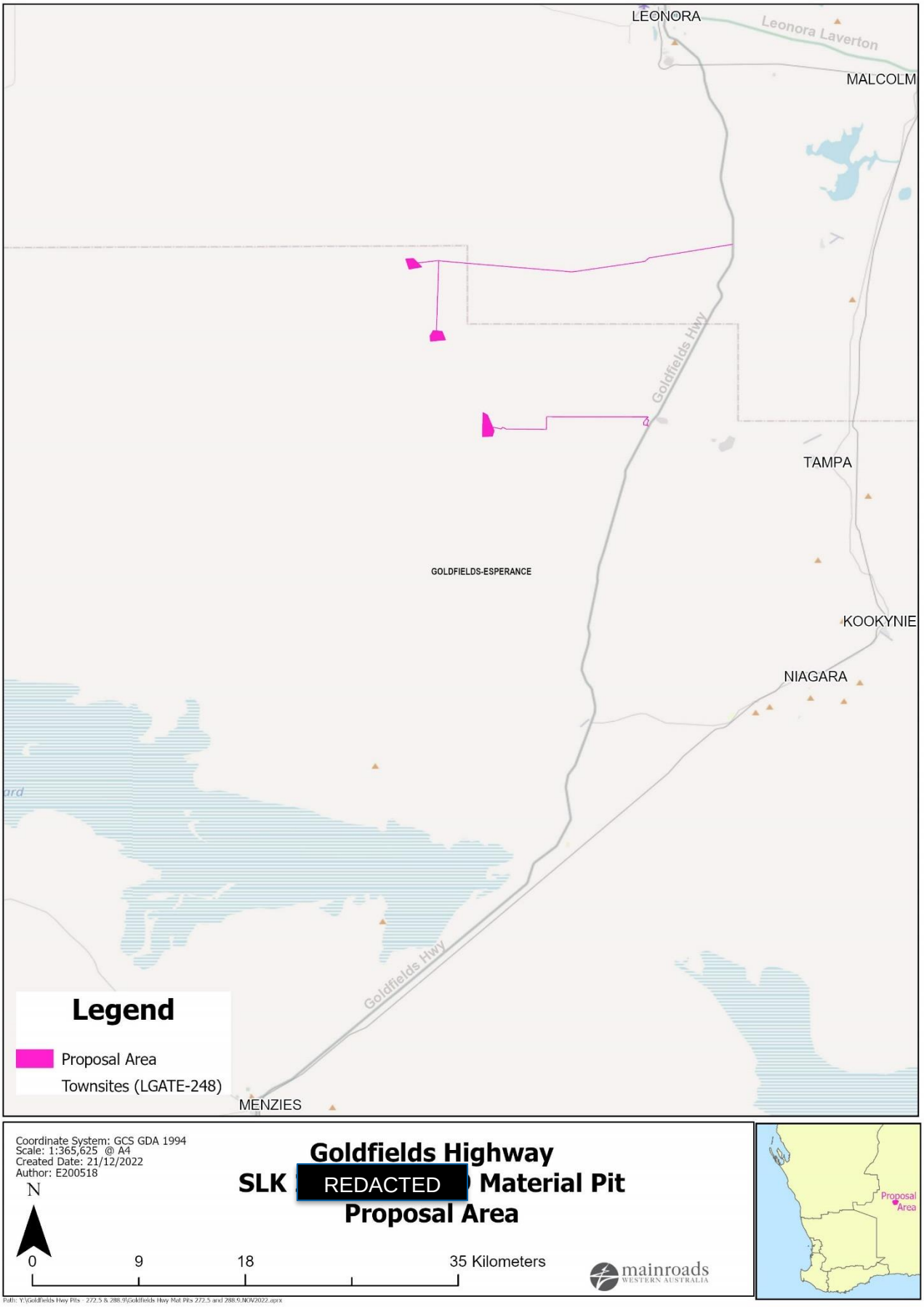

Figure 2. Proposal Area location Map

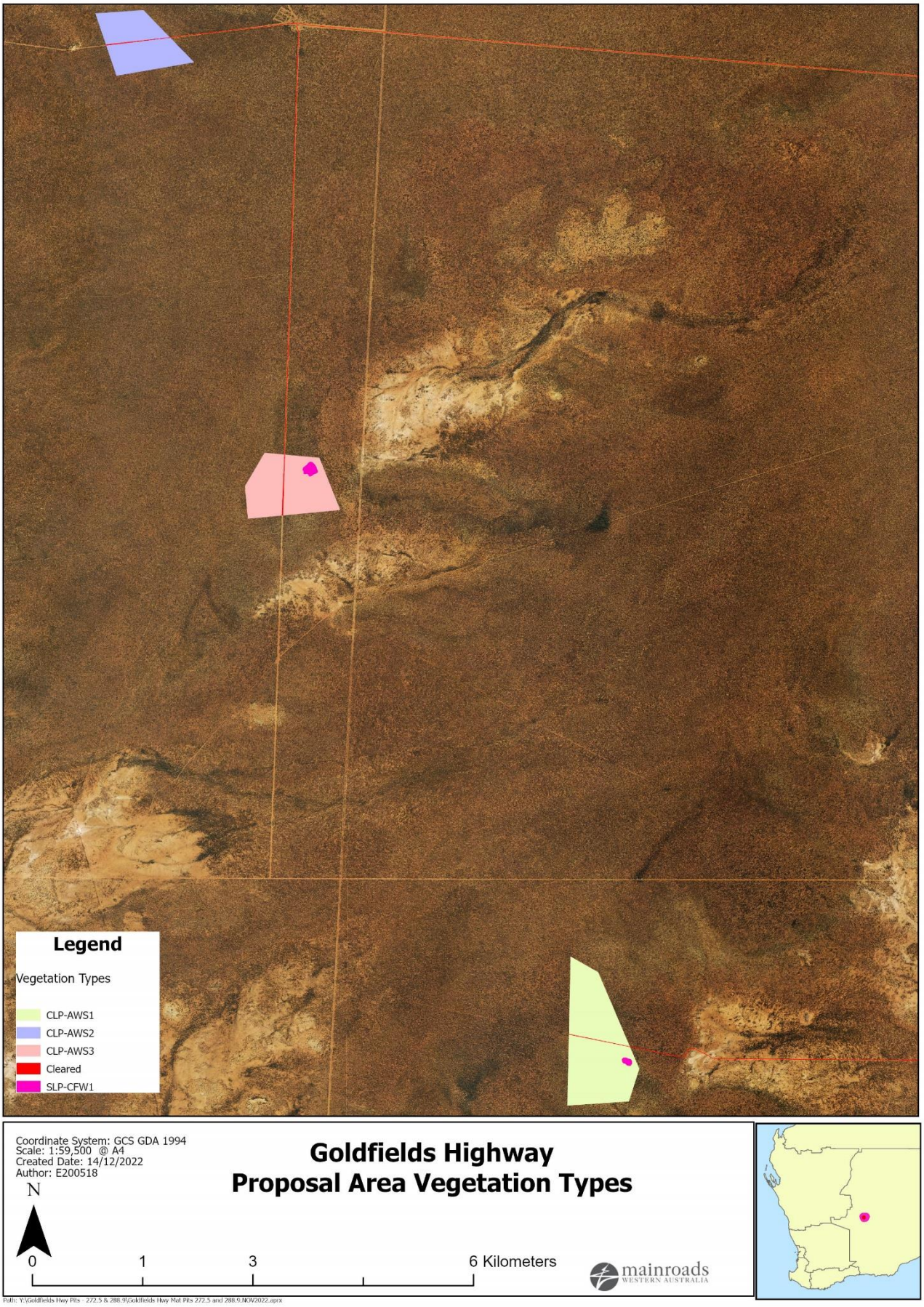

Figure 3. Vegetation within Proposal Area

1.5 Alternatives to Native Vegetation Clearing Considered During Proposal Development

The Goldfields-Esperance region does not have sufficient volumes of road construction material available within a feasible distance for future projects planned to be delivered within the region. This proposal has been developed based on its long-term viability to supply upcoming and future projects with suitable resources.

Main Roads WA investigated the use of commercial sources of material and existing cleared areas with gravel potential. No reliable or economically viable sources were identified that would provide the region with the ability to deliver future Projects.

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

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

Design or Management Measure	Discussion and Justification
Simplification of design to reduce number of lanes and/or complexity of intersections	Existing cleared haul roads, used historically for mineral exploration activities, will be used for access from Goldfields Highway to facilitate safe access to material pits. No additional clearing is proposed, exit and entry from/to Goldfields Highway will be via existing cleared areas. For the duration of material extraction, access tracks will be maintained for suitability.
Use of existing cleared areas for access tracks, construction storage and stockpiling	Two existing Haul roads (SLK 272.5 and 288.9) are proposed to be used to access proposed material pits from Goldfields highway. One existing haul road connecting the proposed northern pit and central pit will be used for access to the central pit via the northern pit. The existing cleared haul roads/access track extend over 55 ha. This proposal has avoided at least 55 ha of vegetation clearing for the purpose of access to material pits. This proposal will require the existing access tracks and haul roads to be utilised for the duration of works, maintenance of the existing cleared areas is anticipated and will avoid future impacts to undisturbed vegetation for access to material pit locations.

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).

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 Assessment Report (CAR).

The CAR 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 (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.

- **Proposal Area** – The maximum extent within which the Clearing Area will be located (including both cleared and uncleared areas). This envelope larger than the Clearing Area to allow 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 CAR has assessed all environmental values within the Proposal Area as though all of these values will be impacted, up to the amount specified within the Clearing Area.

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

- **Survey Area**– Area covered by the 2022 Biological Survey, which is consistent with the Proposal Area limit.

2.2 Desktop Assessment

A desktop assessment of the Proposal Area 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 ArcPro, referencing of the GIS layers accessed is included under the 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 survey was undertaken to inform this CAR:

1. Botanica Consulting (2022) Goldfields Hwy Material Sources SLK [REDACTED] Biological Survey

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 and 3.3.

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

Consultant & Survey Name	Survey Details
Botanica Consulting (2022) Goldfields Hwy Material Sources SLK [REDACTED] Biological Survey	**Survey Area:** Survey area comprised 300.8 ha off Goldfields Highway SLK [REDACTED] . The Survey Area is congruent to the Proposal Area. **Type:** • Desktop assessment within a 30 kilometre (km) radius of the Goldfields Hwy Material Sources (SLK [REDACTED]) Survey Area (referred to as the 'desktop study area'); • Basic fauna survey of the Goldfields Hwy Material Sources (SLK [REDACTED]) and associated access tracks biological Survey Area, covering an area of approximately 300.8 ha; and • Targeted flora survey and detailed flora and vegetation survey of the Goldfields Hwy Material Sources (SLK [REDACTED]) and associated access tracks biological Survey Area, covering an area of approximately 300.8 ha. **Timing:** Detailed flora and vegetation survey and a targeted flora survey on the 6th, 8th June and 1st July 2022 **Survey Area:** 300.8 ha

3.2 Summary of Flora and Vegetation Surveys

A 300.8 ha area was surveyed comprising proposed material pits and the existing haulage routes, accessed via the Goldfields Highway at [REDACTED] SLK. The Survey Area is located 32 km south-west of Leonora and 50 km north-east of Menzies.

The Survey Area is located in the Shire of Menzies, with the access tracks also extending into the Shire of Leonora.

The survey mapped four vegetation types within the Survey Area, which were representative of three pre-European vegetation associations (vegetation association Barlee 18 Barlee 39 and Barlee 483).

The Botanica (2022) survey identified the Survey Area to be dominated by Mallee Woodlands and Shrublands (242.1 ha) with the remaining vegetated area composed of Callitris Woodlands and Shrublands (3.3 ha). The vegetation condition ranged from Good to Very Good, with 55 ha comprising existing access tracks and haul roads considered Completely Degraded.

The desktop assessment identified four Priority flora taxa (as listed by the DBCA) as possibly occurring within the Botanica (2022) Survey Area based on species distribution and known preferred habitat.

None of the Priority flora identified in the desktop assessment were mapped within the Survey Area and no Priority flora were recorded during the field survey. Following the field assessment, all Priority flora identified as possible to occur from the desktop assessment are considered unlikely to occur within the Survey Area.

The DBCA's Priority/ Threatened Ecological Communities Database Search did not identify any Threatened Ecological Community (TEC) listed under the Commonwealth EPBC Act or BC Act as occurring within the desktop Survey Area.

No Threatened or Priority ecological communities were located during the Botanica (2022) survey and are not considered to likely or possibly occur.

3.3 Summary of Fauna Surveys

Two fauna habitats were identified within the Botanica (2022) Survey Area; *Acacia* woodland over *Eremophila* shrubland (242.1 ha) and *Callitris* and *Acacia* woodland over *Eremophila and Senna* shrubland. Results of the literature review and observations made during the field survey identified seven amphibians, eight mammals, 146 bird and 41 reptile species as having been previously recorded in the desktop study area, which have the potential to occur within the Survey Area.

No Threatened fauna or other specially protected species as listed under the Western Australian BC Act or the Commonwealth EPBC Act were identified within the Survey Area. No Priority fauna as listed by DBCA were recorded within the Survey Area.

Based on the habitats present and/ or recent nearby records, three species of significance (Peregrine Falcon (*Falco peregrinus*) "Other Specially Protected Species (BC Act)", Grey Falcon (*Falco hypoleucos*) "Vulnerable (EPBC Act and BC Act)" and Malleefowl (*Leipoa ocellata*) "Vulnerable (EPBC Act and BC Act)" may have some possibility of occurring within the Survey Area, however, no significant impacts to any species are considered likely to occur from the proposal.

The survey did not indefinity potential nest sites for Peregrine Falcon (*Falco peregrinus*) and it is unlikely to breed within the Survey Area, however, the species has a large home range and may potentially occur as an occasional overfly visitor to the Survey Area. Suitable habitat for the Grey Falcon (*Falco hypoleucos*) may be present and the species may occasionally utilise the Survey Area as part of its much larger home range, however, is not likely to represent critical habitat. No evidence of Malleefowl (*Leipoa ocellata*) activity (inactive or active mounds, tracks, feathers or bird observations etc.) were observed within the Survey Area, habitat was considered to be marginal or unsuitable for breeding, however, occasional transients could potentially occur within the Survey Area.

4 VEGETATION DETAILS

4.1 Proposal Site Vegetation Description

The vegetation in the Clearing Area consists of a two major vegetation groups and four vegetation types. The dominant vegetation group consists of Mallee Woodlands and Shrublands which occurs over more than 80% of the clearing area. Vegetation in the Clearing Area is represented by a total of 18 families, 27 genera and 46 taxa. The vegetation condition ranges from Good to Very Good condition with the majority (60.5%) of the vegetation in Very Good condition (EPA, 2016a). Disturbance in the Clearing Area is a result of an existing access tracks and haul roads (Botanica, 2022).

No introduced flora species were identified within the Clearing Area (Botanica, 2022).

Table 3 provides details of the vegetation types and their condition within the Proposal Area and Table 4 provides details of the Pre-European vegetation associations located within the Proposal Area and the remaining extents of these associations.

Table 3. Summary of Vegetation Types within Clearing Area

Landform	NVIS Major Vegetation Group	Vegetation Type	Vegetation Code	Area (ha)	Area (%)
Clay-loam Plain	Mallee Woodlands and Shrublands (MVG 14)	*Eucalyptus websteriana* sparse woodland over *Acacia aneura*, *A. mulganeura* and *A. ramulosa* tall open woodland over *Eremophila forrestii*, *E. latrobei* and *Micromyrtus flaviflora* shrubland over *Eragrostis eriopoda*, *Aristida contorta* and *Sida calyxhymenia* sparse grassland/forbs	CLP-AFW1	112	37.2
		Eucalyptus websteriana sparse woodland over *Acacia aneura*, *A. lasiocalyx* and *A. ramulosa* tall shrubland over *Eremophila forrestii*, *E. homoplastica* and *Exocarpos sparteus* shrubland over *Eragrostis eriopoda* and *Monachather paradoxus* sparse grassland/forbs	CLP-AFW2	60	19.9
		Eucalyptus youngiana and *E. leptopoda* subsp. *elevata* sparse woodland over *Acacia caesaneura*, *A. mulganeura* and *A. quadrimarginea* tall open shrubland over *Eremophila forrestii*, *E. homoplastica* and *Thryptomene decussata* open shrubland	CLP-AFW3	70.1	23.3
Sand-loam Plain	Callitris Woodlands and Shrublands (MVG 7)	*Callitris columellaris*, *Acacia mulganeura* and *Grevillea stenobotrya* woodland over *Acacia ramulosa*, *Eremophila georgei* and *Senna artemisioides* subsp. *filifolia* open shrubland over *Olearia stuartii*, *Thryptomene costata* and *Rhagodia eremaea* low open shrubland	SLP-CWS1	3.3	1.1
Cleared			N/A	55.4	18.4
TOTAL				**300.8**	**100**

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. 18 Barlee Low woodland; mulga (Acacia aneura)	**Statewide**	19,892,306	19,843,148	99	6
	IBRA Bioregion Murchison	12,403,172	12,363,252	99	5
	IBRA Sub-region Eastern Murchison	10,269,896	10,234,838	99	5
	Local Government Authority LEONORA, SHIRE OF	2,010,057	2,002,508.00	99	2
	MENZIES, SHIRE OF	2,010,841	2,009,670	99	3
Veg Assoc No. 39 Barlee Shrublands; mulga scrub	**Statewide**	26,505,874	26,445,726.51	99	8
	IBRA Bioregion Murchison	1,148,400	1,138,064	99	3
	IBRA Sub-region Eastern Murchison	10,981,225	10,936,773	99	5
	Local Government Authority LEONORA, SHIRE OF	252,141	245,994	97	-
Veg Assoc No. 483 Barlee Shrublands; mulga scrub	**Statewide**	439,579	439,547	99	12
	IBRA Bioregion Murchison	238599	238567	99	13
	IBRA Sub-region Eastern Murchison	238,599	238,567	99	13
	Local Government Authority MENZIES, SHIRE OF	365,989	365,957	99	8

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 likely to be at variance to this Principle.

Assessment

The Proposal requires the clearing of 245.4 ha of native vegetation across two major vegetation groups, divided into four vegetations codes, mapped during the 2022 survey (Figure 3).

Four vegetation codes identified within the two MVG; (Mallee Woodlands and Shrublands (MVG 14) and Callitris Woodlands and Shrublands(MVG 7)) within the Proposal Area are described below.

Vegetation codes within MVG 14;

CLP-AFW1
- *Eucalyptus websteriana* sparse woodland over *Acacia aneura*, *A. mulganeura* and *A. ramulosa* tall open woodland over *Eremophila forrestii*, *E. latrobei* and *Micromyrtus flaviflora* shrubland over *Eragrostis eriopoda*, *Aristida contorta* and *Sida calyxhymenia* sparse grassland/forbs

CLP-AFW2
- *Eucalyptus websteriana* sparse woodland over *Acacia aneura*, *A. lasiocalyx* and *A. ramulosa* tall shrubland over *Eremophila forrestii*, *E. homoplastica* and *Exocarpos sparteus* shrubland over *Eragrostis eriopoda* and *Monachather paradoxus* sparse grassland/forbs

CLP-AFW3
- *Eucalyptus youngiana* and *E. leptopoda* subsp. *elevata* sparse woodland over *Acacia caesaneura*, *A. mulganeura* and *A. quadrimarginea* tall open shrubland over *Eremophila forrestii*, *E. homoplastica* and *Thryptomene decussata* open shrubland

Vegetation code within MVG 7;

SLP-CWS1
-*Callitris columellaris*, *Acacia mulganeura* and *Grevillea stenobotrya* woodland over *Acacia ramulosa*, *Eremophila georgei* and *Senna artemisioides* subsp. *filifolia* open shrubland over *Olearia stuartii*, *Thryptomene costata* and *Rhagodia eremaea* low open shrubland

The Biological survey (Botanica, 2022) mapped vegetation code CLP-AFW1 as being in a Good to Very Good condition, CLP-AWS2 and CLP-AFW3 is mapped as Very Good condition and the remaining vegetation code SLP-CWS1 ranges from Good to Very Good condition. Refer to Figure 4 for vegetation condition mapping. Disturbance within the Botanica (2022) Survey Area is a result of an existing access roads.

A desktop assessment was completed to inform the biological field survey which identified 20 Priority flora species within a 30 km study area surrounding the Proposal Area (Botanica 2022). A "likelihood of occurrence" assessment based on species distribution and known preferred habitat determined four Priority flora species may "possibly" occur within the Proposal Area:

- *Thryptomene eremaea* (P2)
- *Acacia sp. Marshall Pool* (G. Cockerton 3024) (P3)
- *Calytrix praecipua* (P3), and
- *Eucalyptus jutsonii subsp. jutsonii* (P4)

The field Biological survey identified no Threatened flora taxa listed under EPBC Act or BC Act within the Proposal Area, in addition no Priority or otherwise significant flora were identified within the Proposal Area (Botanica 2022). Informed by the results of the field survey, a post survey likelihood of occurrence assessment considered the above four Priority flora identified in the desktop assessment as "unlikely" to occur within the Proposal Area (Botanica 2022), further detail on each species is provided below.

Thryptomene eremaea (P2) - Unlikely to occur
Preferred habitat of this taxon includes red and yellow sandplains, this habitat was not present within the Proposal Area. The nearest DBCA record is located 30 km south-west of the Proposal Area (Botanica 2022).

Acacia sp. *Marshall Pool* (G. Cockerton 3024) (P3) - Unlikely to occur
Preferred habitat of this taxon includes low to high rounded hills of weathered gabbro and basalt with infiltrated paleo groundwater calcrete which were not present within the Proposal Area. The nearest DBCA record is located 30 km west of the Proposal Area (Botanica 2022).

Calytrix praecipua (P3) - Unlikely to occur
Preferred habitat includes skeletal sandy soils on granite and limestone outcrops and breakaways, which were not present within the Proposal Area. The nearest DBCA record of this taxon is located on the access track to the northern sections of the Proposal Area. It is a non-cryptic and perennial species that was actively searched for during the field assessment and not located. The field survey did not identify any suitable habitat, as described above, within the Survey Area (Botanica 2022).

Eucalyptus jutsonii subsp. *jutsonii* (P4) - Unlikely to occur
Preferred habitat of this taxon includes red to pale orange deep sands on dunes and undulating areas, which were not present within the Proposal Area. It is a non-cryptic and perennial species that was actively searched for during the field assessment and not located (Botanica 2022).

No significant vegetation or ecological communities were identified within the Proposal Area (Botanica 2022), the Proposal will not impact any known significant vegetation or ecological communities.

Two broad scale terrestrial fauna habitats were identified within the Proposal Area, excluding areas mapped as cleared. The two fauna habitats identified in the Proposal Area are identified in Table 5 below and displayed in Figure 5.

Table 5 Fauna habitats identified in the Survey Area

Fauna Habitat	Description	Representative Fauna Attributes	Significant Species that possibly occur in habitat	Representative Vegetation Communities
Clay-loam Plain Acacia Woodlands Area= 242.1 ha (80.5%)	*Acacia* woodland over *Eremophila* shrubland	• Ground not especially suited to burrowing species. • Low diversity vegetation strata supporting moderate avifauna assemblage.	Malleefowl *Leipoa ocellata* Peregrine Falcon *Falco peregrinus* Grey Falcon	CLP-AFW1 CLP-AFW2 CLP-AFW3

		• Low to moderate vegetation density and low leaf litter.	*Falco hypoleucos*	
Sand-Loam Plain Callitris Woodland Area= 3.3 ha (1.1%)	*Callitris* and *Acacia* woodland over *Eremophila and Senna* shrubland	• Substrate well suited for burrowing small mammals and reptiles. • Moderately diverse vegetation strata supporting diverse avifauna assemblage. • Moderate vegetation density and moderate leaf litter.	Malleefowl *Leipoa ocellata* Grey Falcon *Falco hypoleucos*	SLP-CFW1

A desktop assessment identified a total of 202 fauna species as potentially occurring within 30 km radius of the Proposal Area. Of these, six are amphibians, eight mammals, 41 reptile and 146 birds (Botanica, 2022).

Based on the habitats present and/or recent nearby records, the field assessment of potentially occurring significant species identified three taxa as 'Possible' to occur in the Survey Area. These are listed below:

- Peregrine Falcon (*Falco peregrinus*) –Other Specially Protected Species (BC Act)
- Grey Falcon (*Falco hypoleucos*) - Vulnerable (EPBC Act and BC Act)
- Malleefowl (*Leipoa ocellata*) –Vulnerable (EPBC Act and BC Act)

It was determined that all three species may potentially occur as occasional transients as part of their larger home range but are unlikely to breed within the Proposal Area due to lack of suitable nesting or breeding habitat. These species are unlikely to be significantly impacted by disturbance activities. None of the identified significant fauna taxa were recorded within the Proposal Area during the field survey (Botanica, 2022).

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

Methodology

- Biological Survey (Botanica, 2022),
- DCCEEW Protected Matters Search Tool Report
- Department of Natural Resources and Environment (2022)
- Government GIS Shapefiles:
  - DBCA Threatened and Priority Ecological Community database search (Accessed 14/12/2022)
  - DBCA Threatened and Priority flora database search (Accessed 14/12/2022)
- Natural Resource Management SLIP Soil Systems (Accessed 14/12/2022)
- Statewide Vegetation Statistics (Government of Western Australia 2019)

(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.

Assessment

A fauna survey was undertaken over the Clearing Area (Botanica, 2022). Two fauna habitats were identified (not including cleared area). Table 5 (above) describes these two fauna habitats and the significant species that might possibly occur within these habitats (refer also to Figure 5).

Based on the habitats present and recent nearby fauna records identified during the desktop assessment, the following significant species were listed as possibly occurring within the Clearing Area:

Peregrine Falcon *(Falco peregrinus)* –Other Specially Protected Species (BC Act)
This species potentially occurs aerially over the survey area as part of a much larger home range, though records in this area are rare and therefore it may only be an occasional visitor. No potential nest sites observed and is therefore unlikely to breed within the Proposal Area. The nearest DBCA records are located ~26 km north-east of the Proposal Area. Significant impact unlikely.

Grey Falcon (*Falco hypoleucos*) - Vulnerable (EPBC Act and BC Act)
This species is sparsely recorded throughout inland Australia. Suitable habitat may be present within the Proposal Area, however, is unlikely to represent critical habitat. The species may potentially utilise the Proposal Area as part of a much larger home range. Significant impact unlikely.

Malleefowl (*Leipoa ocellata)* –Vulnerable (EPBC Act and BC Act)
This species is occasionally recorded in the Eastern Murchison subregion. Habitat appears marginal/or unsuitable for breeding due to sparse vegetation cover, however, occasional transients could potentially occur. No evidence of malleefowl activity (inactive or active mounds, tracks, feathers or bird observations etc.) were observed within the Proposal Area. The nearest record is located ~12 km east of the southern Proposal Area, dated July 2009. Significant impact unlikely.

While the Clearing Area may potentially support Malleefowl, the Proposal is not considered to be clearing significant habitat for fauna indigenous to Western Australia given the species was not identified in the Clearing Area during the biological field survey (Botanica, 2022), and the proposed clearing is in an area that contains large tracts of intact connected vegetation similar in structure and condition. The clearing of native vegetation that is well represented with no recent evidence of utilisation by this species is considered highly unlikely to impact on significant fauna habitat or restrict ecological linkages that prevent fauna moving across the landscape (Botanica, 2022). Standard construction management techniques such as creating no-go zones and flagging of known nesting mounds outside of the Clearing Area will ensure any identified Mallefowl nesting sites are not disturbed.

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

Methodology

- Biological Survey (Botanica, 2022)
- DCCEEW Protected Matters Search Tool Report (2022)
- Government GIS Shapefiles:
  - DBCA Threatened and Priority fauna database search (Accessed14/12/2022)
  - Ecological Linkages (Accessed14/12/2022)

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

Proposal is not likely to be at variance to this Principle.

Assessment

The results of the desktop assessment and literature review undertaken as part of the 2022 biological survey including searches of the DBCA significant flora databases and the DCCEEW Protected Matters Search Tool did not identify any significant flora previously recorded within the Clearing Area (Botanica, 2022). The desktop assessment (Botanica 2022) significant identified a total of four Priority flora species protected under the BC Act to potentially occur within the 30 km Study Area:

- *Thryptomene eremaea* (P2)

Preferred habitat of this taxon includes red and yellow sandplains, which were not present within the Proposal Area. The nearest DBCA record is located 30 km south-west of the Proposal Area (Botanica, 2022).

- *Acacia sp.* Marshall Pool (G. Cockerton 3024) (P3)

Preferred habitat based on previous flora and vegetation surveys of this taxon includes low to high rounded hills of weathered gabbro and basalt with infiltrated paleo groundwater calcrete (DMIRS, 2022), which were not present within the Proposal Area. The nearest DBCA record is located 30 km west of the Proposal Area (Botanica, 2022).

- *Calytrix praecipua* (P3)

Preferred habitat includes skeletal sandy soils on granite and limestone outcrops and breakaways, which were not present within the Proposal Area. The nearest DBCA record of this taxon is located on the access track to the northern sections of the Proposal Area. However, it is a non-cryptic and perennial species that was actively searched for during the field assessment and not located. The field survey also did not identify any suitable habitat, as described above, within the Proposal Area (Botanica, 2022).

- *Eucalyptus jutsonii subsp. jutsonii* (P4)

Preferred habitat of this taxon includes red to pale orange deep sands on dunes and undulating areas, which were not present within the Proposal Area. It is a non-cryptic and perennial species that was actively searched for during the field assessment and not located Proposal Area (Botanica, 2022).

The field Biological survey identified no Threatened flora taxa listed under EPBC Act or BC Act within the proposal area, in addition no Priority or otherwise significant flora were identified within the proposal area (Botanica 2022).

Informed by the results of the field survey, a post survey likelihood of occurrence assessment considered the above four Priority Flora identified in the desktop assessment as "unlikely" to occur within the proposal area (Botanica 2022).

Based on the above, the proposed clearing is not likely to be at variance with this Principle.

Methodology

- Biological Survey (Botanica 2022)
- Government GIS shapefiles:
    - DBCA Threatened flora database search (Accessed 14/12/2022)
- DCCEEW Protected Matters Search Tool Report (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

No Threatened Ecological Communities (TEC) were identified as occurring under the *Biodiversity Conservation* (BC) Act or the *Environmental Protection and Biodiversity Conservation* (EPBC) Act.
The vegetation types that were assessed as occurring within the Clearing Area are not considered representative of any State of Federal listed TEC (Botanica, 2022).

Based on the above information, the proposed clearing is considered not at variance to this Principle.

Methodology

- Biological Survey (Botanica, 2022)
- Government GIS shapefiles:
  - DBCA Threatened Ecological Community database search (Accessed 14/12/2022)
- DCCEEW Protected Matters Search Tool Report (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 occurs within the Coolgardie IBRA bioregion and the Eastern Murchison IBRA Sub-region of which approximately 99%, pre-European extent is remaining, respectively (Government of WA, 2019).
The following pre-European Vegetation Associations have been mapped within the Clearing Area:

1. Veg Assoc No. 18 Barlee: Low woodland; mulga (*Acacia aneura*)
2. Veg Assoc No.39 Barlee: Shrublands; mulga scrub
3. Veg Assoc No. 483 Barlee: Shrublands; mulga scrub

The National Objectives and Targets for Biodiversity Conservation recognise that the retention of 30% or more of the pre-clearing extent of each ecological community is necessary if Australia's biological diversity is to be protected (Commonwealth of Australia 2001) except in constrained areas (Perth & Peel) where 10% representation should be maintained.

Table 6 Pre-European Vegetation Associations within Proposal Area

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. 18 Barlee Low woodland;	**Statewide**	19,892,306	19,843,148	99	6
	IBRA Bioregion Murchison	12,403,172	12,363,252	99	5

mulga (Acacia aneura)	**IBRA Sub-region** Eastern Murchison	10,269,896	10,234,838	99	5
	Local Government Authority LEONORA, SHIRE OF	2,010,057	2,002,508.00	99	2
	MENZIES, SHIRE OF	2,010,841	2,009,670	99	3
Veg Assoc No. 39 Barlee Shrublands; mulga scrub	**Statewide**	26,505,874	26,445,726.51	99	8
	IBRA Bioregion Murchison	1,148,400	1,138,064	99	3
	IBRA Sub-region Eastern Murchison	10,981,225	10,936,773	99	5
	Local Government Authority LEONORA, SHIRE OF	252,141	245,994	97	-
Veg Assoc No. 483 Barlee Shrublands; mulga scrub	**Statewide**	439,579	439,547	99	12
	IBRA Bioregion Murchison	238599	238567	99	13
	IBRA Sub-region Eastern Murchison	238,599	238,567	99	13
	Local Government Authority MENZIES, SHIRE OF	365,989	365,957	99	8

Pre-European Vegetation Associations 18, 39 and 483 present within the Clearing Area are well represented having over 97% remaining at all scales.

The proposed clearing is not expected to significantly impact on connectivity with other remnant vegetation in the local area or reduce the capacity of the remaining vegetation within the local area to act as an ecological linkage.

Taking the above into consideration, the clearing of vegetation associated with this Proposal is considered not at variance to this Principle.

Methodology

- Biological Survey (Botanica, 2022)
- Government GIS shapefiles:
  - Pre-European vegetation (Accessed 14/12/2022)
- Statewide Vegetation Statistics (Government of Western Australia, 2019) (Accessed 14/12/2022)
- Aerial photography Landgate Imagery LGATE-320; (Accessed 14/12/2022)

(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

The Clearing Area is not within a Proclaimed surface water area. A search of Arc GIS shapefiles did not identify any surface water features within 9 km of the proposed Clearing Area. The nearest significant surface water feature is Lake Raeside, located approximately 9 kms to the north of the Proposal.

No vegetation within the Clearing Area has been mapped as riparian vegetation. Taking the above into consideration, the Proposal is not at variance to this Principle.

Methodology

- Biological Survey (Botanica 2022)
- Government GIS shapefiles:
  - Ramsar Sites (DBCA-010) (Accessed 14/12/2022)
  - Directory of Important Wetlands in Australia - Western Australia (DBCA-045) (Accessed 14/12/2022)
  - Hydrography Linear (Hierarchy) (DWER-031) (Accessed 14/12/2022)

(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 Study Area (Botanica, 2022) is within the Murchison Province, consisting of hardpan wash plains and sandplains (with some stony plains, hills, mesas and salt lakes) on granitic rocks and greenstone of the Yilgarn Craton. The soil types typically consist of red loamy earths, red sandy earths, red shallow loams, red deep sands and red-brown hardpan shallow loams with some red shallow sands and red shallow sandy duplexes present. Based on vegetation descriptions made during the biological survey (Botanica 2022) the Proposal Area occurs within Clay-loam and Sand-loam plains.

Regional National Resource Mapping (NRM) in addition to ASRIS (ASRIS) CSIRO ASS risk mapping indicates that the Proposal Area contains; alkaline soils of a low water holding capacity, soil surface has a very high to extreme water and wind erosion risk, a moderate to high waterlogging risk and a moderate to high flood hazard risk area.

The closest hydrological drainage feature (major river) occurs over 9 km north of the Proposal Area and drains in a south-eastern direction to Lake Raeside over 50km south-east of the proposal. The drainage feature is likely to be dry for most of the year, only flowing immediately following significant rainfall.

Flooding due to rainfall and natural surface flows is not likely to adversely affect the clearing area or surrounding area. Localised ponding of water may result following rainfall, however, given the regions low annual rainfall (< 250mm) and that peak rainfall occurs between January to March (Botanica, 2022), evaporation rates are expected to be very high. The use of water for dust suppression will occur if dust poses a risk to safety, water usage will be minimal and weather forecasts will be monitored to ensure operations are minimised during conditions favourable to dust generation. In addition, cleared material pit floor will be concave to avoid surface water flows release to the surrounding environment.

Clearing will be undertaken progressively on an as needs basis which will reduce the potential for any appreciable land degradation. Areas exhausted of suitable road construction materials will be closed and managed to encourage revegetation. Pit areas to be closed will be ripped, stockpiled topsoil and vegetation is to be backspread over the surface to reduce degradation and encourage regeneration of vegetation.

Other standard management techniques will be incorporated in the project CEMP / PEMR to manage potential operational impacts on the surrounding environment.

Based on the above, the proposed clearing is considered not likely to be at variance to this Principle.

Methodology

- Biological Survey (Botanica, 2022)
- Government GIS Shapefiles:
  - Acid Sulphate Soil Risk Map (Accessed 14/12/2022)
  - Soil landscape land quality – Water Erosion Risk (Accessed 04/01/2023)
  - Soil landscape land quality – Wind Erosion Risk (Accessed 04/01/2023)
  - Soil landscape land quality – Salinity Risk (Accessed 04/01/2023)
  - Soil landscape land quality – Surface Acidity (Accessed 04/01/2023)
  - Soil landscape land quality – Waterlogging Risk (Accessed 04/01/2023)
  - Soil landscape land quality – Flood Risk (Accessed 04/01/2023)
- Australian Soil Resource Information System, Atlas of Australian Acid Sulfate Soils (Accessed 04/01/2023)

(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

The proposed gradual clearing across the 245.4 ha site for the purpose of material extraction is not expected to impact the environmental values of any conservation reserves or the surrounding area.

There are no wetlands of international importance (Ramsar Wetlands) or national importance (Australian Nature Conservation Agency Wetlands) within 30 km of the Proposal Area.

There are no proposed or gazetted conservation reserves within the 30 km of the Proposal Area. The closest area of conservation significance is the Lake Ballard wetland complex, which is categorised as an ESA and Wetland of National Importance. Lake Ballard is located approximately 30 km south-west of the Proposal Area.

Based on the above and works limited to within the defined Proposal area, the proposed clearing is not at variance to this Principle.

Methodology

- Biological Survey (Botanica, 2022)
- Government GIS Shapefiles:
  - Directory of Important Wetlands in Australia - Western Australia DBCA-045 (Accessed 14/12/2022)
  - DBCA Legislated Lands and Waters; DBCA-011 (Accessed 14/12/2022)
  - DBCA - Lands of Interest; DBCA-012 (Accessed 14/12/2022)
  - Ramsar Sites; DBCA-010 (Accessed 14/12/2022)
  - EPA Redbook Recommended Conservation Reserves 1976-1991; DBCA-029 (Accessed 05/01/2023)
  - Reserves; LGATE-277 (Accessed 05/01/2023)

(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

A search of ArcGIS shapefiles did not identify any surface water features within or adjacent to the Proposal Area. The nearest surface water feature is a major river, located approximately 9 km north of the Proposal Area flowing southeast to Lake Raeside (approximately 50 km from the Proposal Area). Lake Raeside is not a listed as Ramsar Wetland or nationally important wetlands (Australian Nature Conservation Agency (ANCA) Wetlands). No impact to this waterway will occur from proposed activities.

The Proposal is situated within the Goldfields Groundwater Area, Proclaimed Groundwater Area (RIWI Act). The Proposal does not occur within a Public Drinking Water Source Area (PDWSA), the Lenora Water Reserve is located approximately 29 km north of the Proposal Area. No impact to the PDWSA will occur from proposed activities.

No surface or ground water will be abstracted as part of this proposed clearing. If water resources are identified to be required in the future, all relevant licences (to construct a bore/to extract water) will be obtained.

Taking the above into consideration, it is unlikely that Proposal will cause any deterioration in the quality of surface or underground water. The proposed clearing is not at variance to this Principle.

Methodology

- Biological Survey (Botanica, 2022)
- Government GIS Shapefiles:
  - RIWI Act, Surface Water Areas and Irrigation Districts (Accessed 14/12/2022)
  - RIWI Act, Groundwater Areas (Accessed 14/12/2022)
  - Directory of Important Wetlands in Australia - Western Australia DBCA-045 (Accessed 14/12/2022)
  - Hydrography Linear (Hierarchy); DWER-031 (Accessed 14/12/2022)

(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 soils in the area occur within the Salinaland Plains Zone. The soil landscape is described as sandplains (with hardpan wash plains and some mesas, stony plains and salt lakes) on granitic rocks of the Yilgarn Craton with Red sandy earths, Red deep sands, Red shallow loams (sometimes with hardpans) and Red loamy earths (NRM, 2022).

Regional Mapping indicates that the Proposal Area contains; alkaline soils of a low water holding capacity with a very high to extreme water and wind erosion risk, a moderate to high waterlogging risk and a moderate to high flood hazard risk area (NRM, 2022).

Flooding due to natural surface flows or rainfall is not likely to adversely affect the clearing area, no surface drainage features flow towards or occur within 9 km of the Proposal Area. Localised ponding of water may result following extreme rainfall, however, given the regions low annual rainfall (<250 mm) and peak rainfall occurs between January to March (Botanica, 2022), evaporation rates are expected to be very high. In addition, the cleared material pit floor will be concave to avoid surface water flows release to the surrounding environment.

Typically, rainfall events are not likely to result in major flooding events across the Proposal Area. Proposed clearing will not increase the likelihood or intensify impacts of flooding within or adjacent to the Proposal Area.

Taking the above into consideration, the proposed clearing is not at variance to this Principle.

Methodology

- Biological Survey (Botanica, 2022)
- BoM Website (Accessed 12/07/2022)
- Department of Natural Resources and Environment (2022)

6 STAKEHOLDER CONSULTATION

Main Roads stakeholder consultation is only required when the clearing is likely to be 'at variance' or 'may be at variance' with the Clearing Principles. As clearing is not likely or may be at variance to any of the clearing principles no consultation will be completed

7 COMPLIANCE WITH CPS 818

Table 7 summarises what further pre-clearing impact assessment is required in accordance with CPS 818.

Table 7. 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.	**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.	**NA**	
3. Clearing is at variance with Clearing Principle (g) land degradation, (i) surface or underground water quality **and** (j) the incidence of flooding.	**NA**	
4. The Proposal involves clearing for temporary works (as defined by CPS 818).	**Yes**	CPS 818 Condition 9 Revegetation and Rehabilitation requirements will be implemented.
5a. Proposal is within a Region that: • has rainfall greater than 400mm; and, • is South of the 26th parallel; and, • works are necessary in 'Other than dry conditions'; and, • 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.

Impact of Clearing	Yes/No or NA	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. CEMP requires that all vehicles and machinery arrive on site clean to prevent introduction and spread of weeds within the Proposal Area.
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.
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 was suitably qualified and had more than three years' experience.

8 REFERENCES

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9 APPENDICES

Appendix 1: Environmental Constraint Mapping

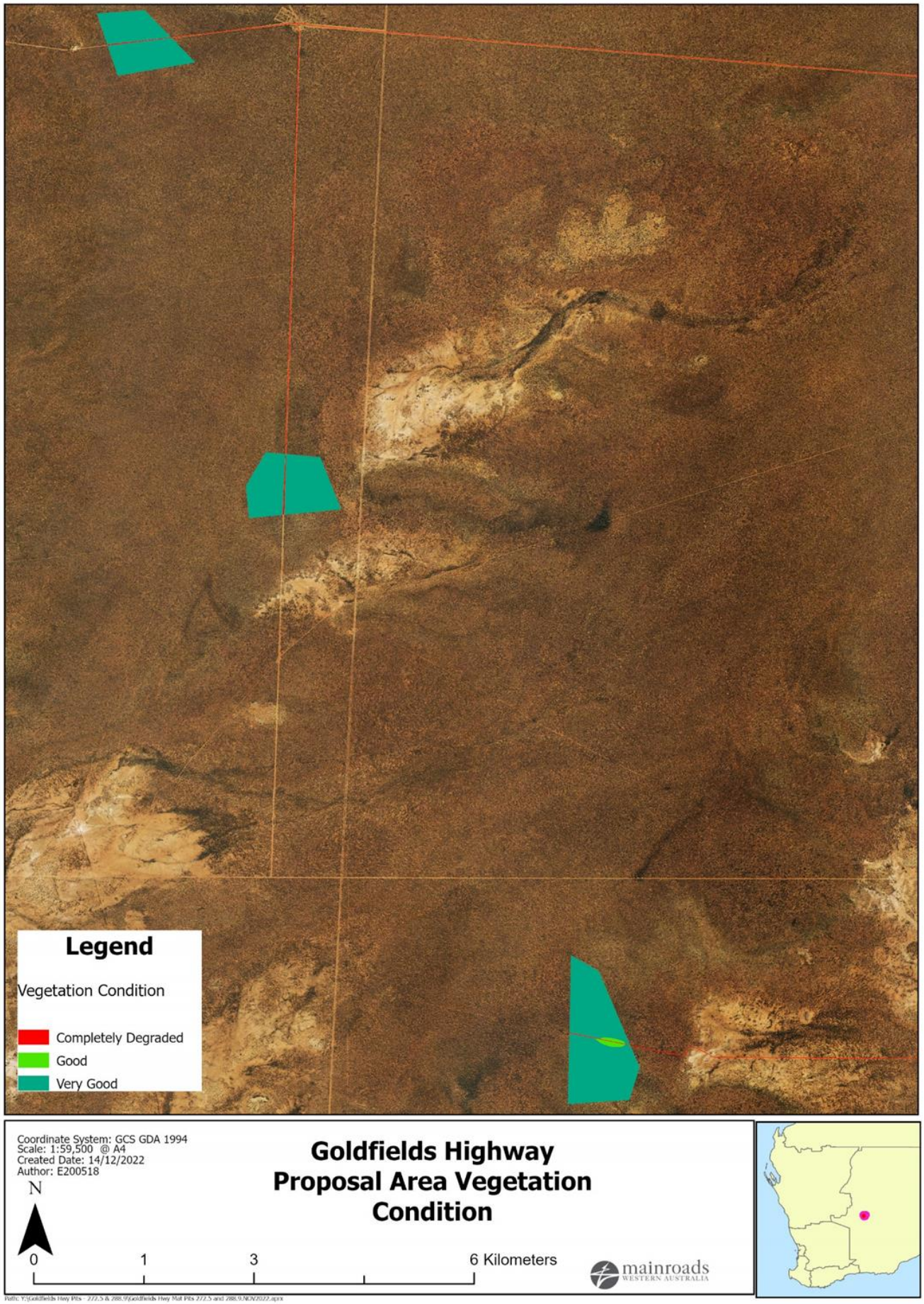

Figure 4. Proposal Vegetation Condition Map

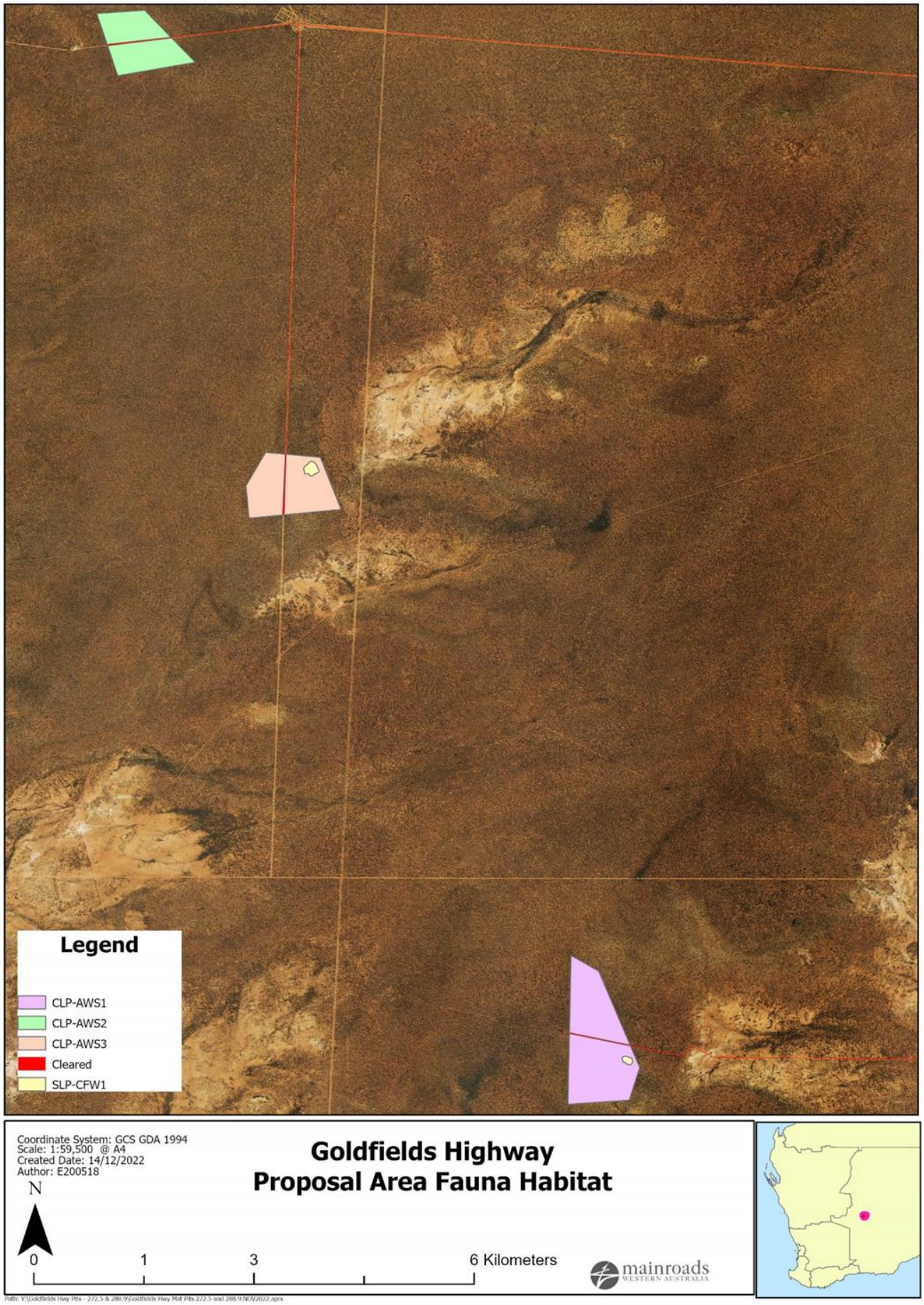

Figure 5. Proposal Fauna Habitat Map

Appendix 2: Principal Environment Requirements (PEMR's)

Principal Environmental Management Requirements (PEMR's)

Table 1: Clearing PEMR

STANDARD MANAGEMENT REQUIREMENTS
PRE WORKS 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. 2. The Contractor must minimise vegetation clearing and the area of disturbance on ground by utilising existing cleared area where possible. 3. The Contractor is to ensure proposed Limits of Clearing are Pegged and Surveyed in accordance with the Pegging and Flagging PEMR. 4. The Contractor must not commence clearing until MRWA Materials Manager has endorsed proposed Limits of Clearing in consolation within Main Roads Regional Environmental Officer
DURING WORKS 5. The Contractor must report any damage to vegetation beyond the Limits of Vegetation Clearing as an Environment Incident. 6. The Contractor must ensure Movements are confined to the Limits of Vegetation Clearing during the works. 7. The Contractor must undertake the clearing in accordance with the Fauna PEMR.
POST WORKS 8. The Contactor is to ensure all actual Limit of Clearing is surveyed and electronic ESRI shapefiles of the limit of clearing are provided to the MRWA Materials Manager within 12 days of completion of clearing.

Table 2: Erosion and Sedimentation Control PEMR

PRE WORKS

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

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

Table 3: Fauna Management PEMR

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

2. The Contractor must undertake the clearing in the following manner to allow fauna to move out of the clearing area;
    a. Prior to the clearing activities commencing, use machinery to tap large trees with habitat hollows to encourage any animals evacuate; and,
    b. Undertake the clearing in one direction and towards areas of native vegetation to allow the animals to escape to adjacent habitat.
3. 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.
4. The Contractor must ensure that:
    a. No pets, traps or firearms are brought into the project area;
    b. Fauna are not fed;
    c. Fauna are not intentionally harmed or killed; and,
    d. 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.).
5. 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 4: Machinery and Vehicle Management PEMR

PRE WORKS

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.
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 Specification 204.B.32.
3. The Contractor must ensure that vehicle servicing and refuelling will be undertaken at designated areas approved by the Superintendent.
4. The Contractor must ensure that all staff suitably qualified and competent to undertake works, especially refuelling activities.

DURING WORKS

1. The Contractor must maintain records of checking all vehicles, machinery and plant are clean on entry.
2. Ensure the movement of vehicles and machinery only occurs in pre-disturbed areas within the limits of vegetation clearing.
3. Spill trays and spill kits must be used and located adjacent to vehicle and machinery refuelling and fuel storage areas.

POST WORKS

NIL

Table 5: Mulch and Topsoil Management PEMR

PRE WORKS

1. The Contractor must ensure that the movement of soil and vegetation is only undertaken in dry conditions unless otherwise approved and / or directed by the Superintendent.
2. The Contractor must ensure that poor quality topsoil and mulched vegetation does not contaminate the good quality topsoil and vegetation.

DURING WORKS

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 across the Proposal area into un-infested areas.
2. The Contractor must ensure the movement of large equipment over stockpiled topsoil and vegetation materials is avoided.
3. The Contractor must ensure that weed infected topsoil and vegetation is handled separately to minimise the risk of spreading weed species across the Proposal Area and into stockpiles.
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 prevent topsoil from being unsuitable for use in future revegetation.

POST WORKS

Nil

Table 6: Pegging and Flagging PEMR

PRE WORKS

1. Pegging must be done in accordance with the requirements detailed in Specification 301.
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

1. The Contractor must peg the Limits of Clearing by PINK flagging tape.
2. The pegged Limit of Clearing is to be surveyed by the Contractor and electronic survey shapefiles are provided to Materials Manager in ESRI shapefile format for endorsement by Main Roads Regional EO prior to commencing clearing.
3. The Contractor is to ensure Pegged Limits of Clearing do not exceed pit clearing limit of 50 ha for the current reporting year.
4. The Contractor must peg/demarcate vegetation proposed to be retained by WHITE flagging tape.
5. The Contractor must ensure that the vegetation demarcated with PINK and WHITE flagging tape is consistent with the approved clearing areas.

POST WORKS

1. The Contractor remove and dispose of appropriately any demarcation, pegging or flagging once proposal works are completed.

Table 7: Weed Management PEMR

PRE WORKS

1. The Contractor must remove or kill any weeds growing in the Proposal 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 Forms available at: https://www.mainroads.wa.gov.au/technical-commercial/contracting-to-main-roads/ must be completed and sent to the Superintendent.