Clearing Assessment Report – CPS 818

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Frog Hollow Creek Widening and Realignment

November 2022

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Contents

Amendments

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

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

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

2 SCOPE

2.1 Project Scope

Project Name: Frog Hollow Creek Widening and Realignment

Project Purpose / Components: The Ord River North Project commenced in 2019, seeking to upgrade Great Northern Highway between Straight Line Kilometres (SLK) 2922 – 2950 in the Kimberley Region. Completed works have seen improvements to horizontal and vertical geometries to upgrade the existing highway to National Highway Standards. As part of works required to complete the Project, a section of Great Northern Hwy at Frog Hollow Creek between SLK 2945.5 – 2947.5 is proposed to be widened and realigned on both sides of the Frog Hollow Creek Bridge.

The proposed clearing undertaking using CPS 818 is: 5.6 ha in 7.4 ha Project Envelope

The proposed temporary clearing undertaking using CPS 818 is: none

Project Location(s): The project area is located on Great Northern Highway H006, between SLK 2945.5 – 2947.5, approximately 180 km south of the township of Kununurra in the Shire of Halls Creek as shown in Figure 1.

- Latitude: -17.279475°
- Longitude: 128.058097°

The location of the proposed works is displayed in Figure 1.

2.2 Assessment Report Scope

The desktop assessment area, see Figure 2, is confined to a local area of a 40 km radius and is referred to as the Study Area in this report.

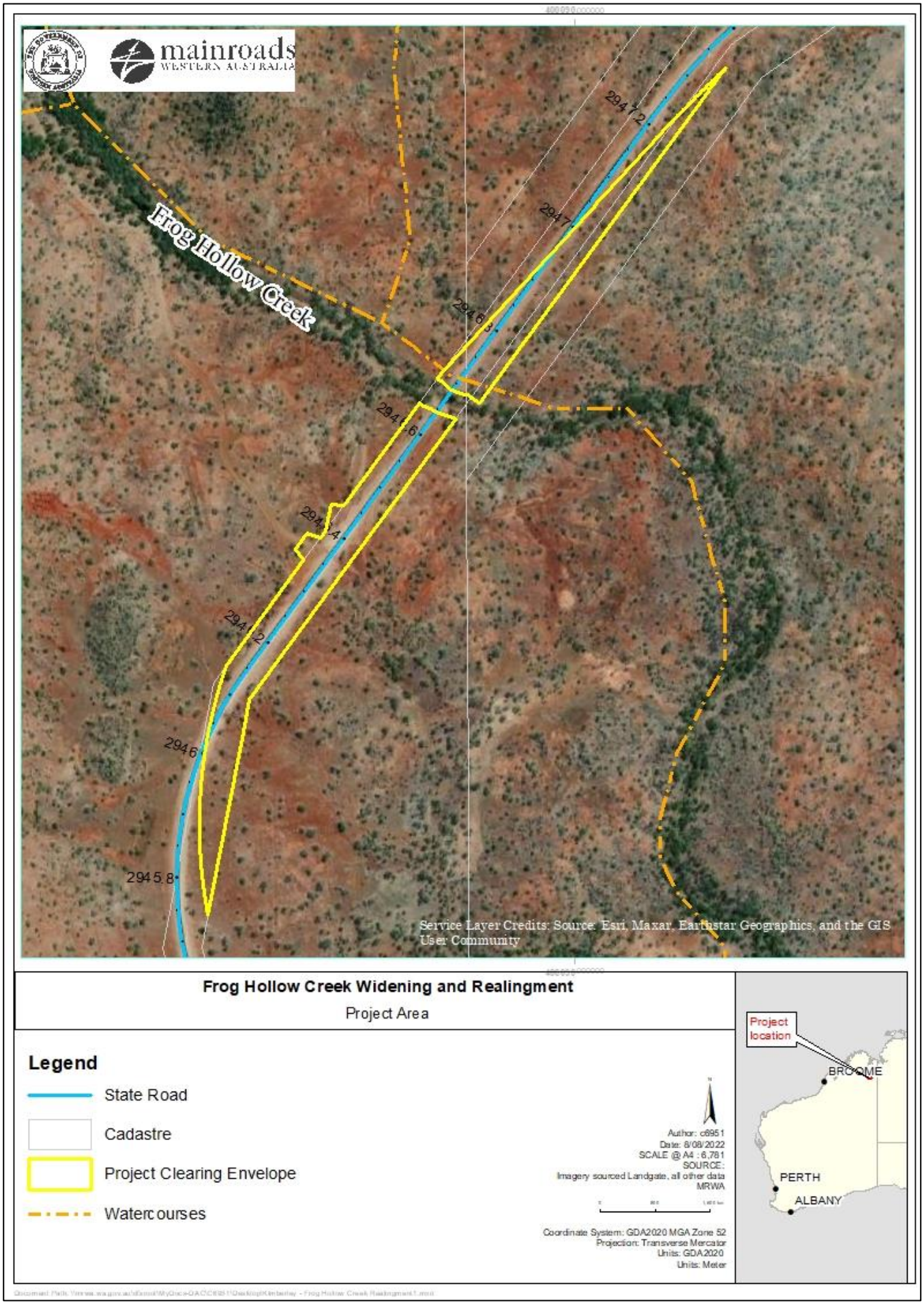

Figure 1. Project Area

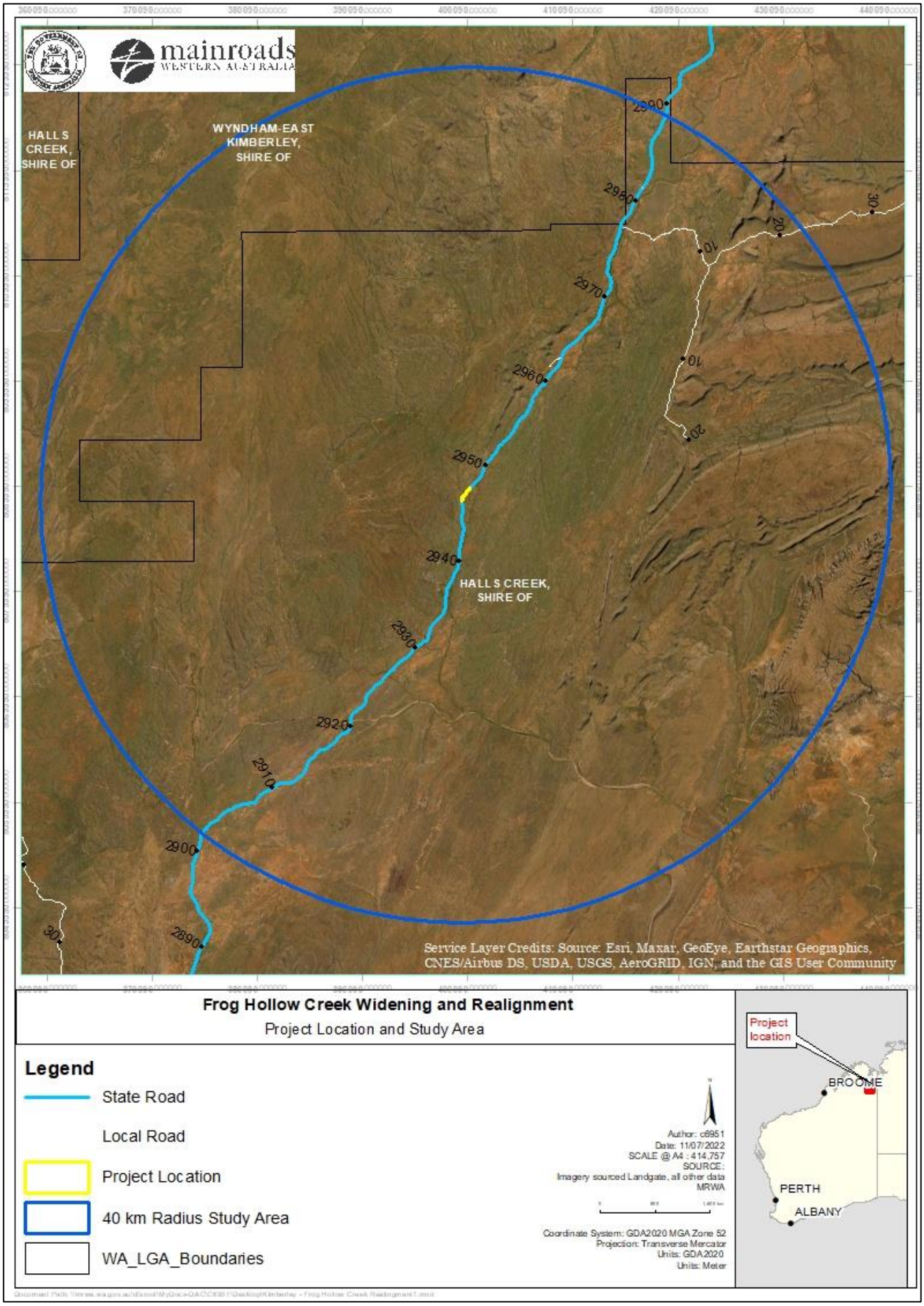

Figure 2. Study Area

2.3 Alternatives to clearing

The existing single-lane bridge at the Frog Hollow Creek crossing on Great Northern Highway presents a significant safety hazard to motorists. Replacement of the existing bridge with a new dual-lane bridge will require clearing to accommodate the new bridge on a new alignment. The new alignment has been selected to minimise the clearing footprint required, without compromising the constructability of the bridge.

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

The design and management measures implemented to avoid and minimise the clearing impacts by the project are provided in Table 1.

In addition, the following measures will be implemented to minimise the impacts to native vegetation:

- the Clearing Area will be demarcated prior to the commencement of native vegetation clearing;
- further Project clearing will be avoided as the site office, materials storage areas, construction vehicles/machinery and access tracks will be located on areas previously approved as part of the larger Ord River North Upgrade Project; and
- development and implementation of a site-specific CEMP which will establish the following vegetation management actions including:
    - clearing and access control measures (such as demarcation of clearing boundaries);
    - weed and dieback management;
    - erosion and sediment control;
    - waste and fire management;
    - topsoil management;
    - dust control;
    - noise management and
    - tree and vegetation retention where possible.

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

Design or Management Measure	Discussion and Justification
Steepen batter slopes	The new alignment is proposed to stay within the road reserve. Batter slopes will be steepened as required, to ensure the extent of works remains within the approved clearing boundary.
Installation of safety barriers	Guard rails will be installed if required, although it is anticipated that steepening of batter slopes will be an adequate measure to ensure all works remain within the clearing boundary.
Alignment to one side of existing road	The new alignment has been selected to minimise the required clearing footprint. This new alignment falls on the eastern side of the existing alignment.
Alternative alignment to follow existing road (or) to preferentially locate within pasture or a degraded areas	Not relevant to proposed works
Installation of kerbing	Not relevant to proposed works.
Simplification of design to reduce number of lanes and/or complexity of intersections	Not relevant to proposed works
Preferential use of existing cleared areas for access tracks, construction storage and stockpiling	The site office, materials storage areas, construction vehicles/machinery and access tracks will be located on areas previously approved as part of the larger Ord River North Upgrade Project.
Drainage modification	Not relevant to proposed works.

2.5 Approved Policies and Planning Instruments

The clearing of native vegetation in Western Australia is regulated under the *Environmental Protection Act 1986* (EP Act) and the Environmental Protection (Clearing of Native Vegetation) Regulations 2004 (Clearing Regulations).

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

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

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

Environmental Protection Policies

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

Other Relevant policies and guidance documents:

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

3 SUMMARY OF SURVEYS

3.1 Biological Survey

The Great Northern Highway SLK 2897-3008 Biological Survey 2014 was conducted in April 2014 by AECOM on behalf of Main Roads WA.

Current listing status and species nomenclature have been checked and updated as required.

Section 3.1.1 contains the summary of the survey.

3.1.1 Summary of Biological Survey

AECOM was commissioned by MRWA in April 2014 to undertake biological investigations for a 111 km corridor along Great Northern Highway between SLK 2897 and SLK 3008 with a buffer of 150 m on either side of the existing road centreline (the Survey Area). A level 1 Flora & Vegetation assessment was undertaken in accordance with Guidance Statement 51 (EPA, 2004a). A level 1 Fauna assessment was conducted in accordance with Guidance Statement 56 (EPA, 2004b). The fauna survey captured visual observations of fauna and included targeting species of conservation significance likely to occur in the area. A buffer of 40 km around the Survey Area was used to provide context for assessing the environmental significance of survey results. This area is referred to as the Study Area in the report. The Project Envelope forms a very small section of the highway and is wholey contained within the AECOM Survey Area..

No Threatened or Priority Ecological Communities (TECs or PECs) were recorded from the survey or were expected to occur. No Threatened species listed under the EPBC Act or the BC Act were recorded during the survey.

No Priority flora species listed under BC Act were recorded during the field survey.

The Biological Survey recorded two conservation significant species from the broader survey area:

- Rainbow Bee-eater *Merops ornatus* (EPBC Act MI)
- Spectacled Hare-wallaby *Lagorchestes conspicillatus* subsp. *leichardti* (DBCA P4)

However, these species were not located within the Project Envelope

4 VEGETATION DETAILS

4.1.1 Project Site Vegetation Description

The Biological Survey, 2014 describes vegetation community from the Project Envelope as Open Woodland over Speargrass on undulating rocky slopes described as *Eucalyptus limitaris, Eucalyptus camaldulensis subsp. obtusa* and *Eucalyptus brevifolia* medium woodland over *Hakea macrocarpa, Gardenia pyriformis* subsp. *pyriformis* and *Indigofera colutea* low to tall open shrubland over *Heteropogon contortus, Aristida latifolia* and *Sehima nervosum* tall tussock grassland. It was recorded on lower slopes with clay sandy loamy soils and scattered granite rocks on the surface. Evidence of cows and weeds were recorded including *Stylosanthes hamata* and *Acanthospermum hispidum*. The condition of this community was recorded as Very Good. However, Completely Degraded vegetation occurs along immediate roadsides. Figure 3 displays the mapped vegetation association within the Project Envelope.

For a full description of the existing vegetation, refer to the "AECOM (2014), Great Northern Highway SLK 2897-3008 Biological Survey 2014".

Tables 2 and 3 provide details of the Pre-European Vegetation Association within the Project Envelope and the remaining extent of this association.

Table 2. Summary of Project Area's Mapped Pre-European Vegetation Association

Pre-European Vegetation Association	Clearing Description	Vegetation Condition	Comments
Vegetation Association 808 described as Grasslands, curly spinifex, low tree savanna; snappy gum over curly spinifex (Government of Western Australia, 2019)	Clearing of up to 5.6 ha in 7.4 ha Project Envelope for road widening and realignment works along Great Northern Highway at Frog Hollow Creek, Shire of Halls Creek.	Very Good (Keighery, 1994)	Vegetation description and condition determined from "AECOM (2014), Great Northern Highway SLK 2897-3008 Biological Survey 2014".

Table 3. Pre-European Vegetation Representation

Pre-European Vegetation Association	Scale	Pre–European (ha)	Current Extent (ha)	% Remaining	% Remaining in DBCA reserves
Veg Assoc No. 808	**Statewide**	1,201,800.25	1,201,483.04	99.97	0.88
	IBRA Bioregion Central Kimberley	1,128,243.76	1,128,218.30	100.00	0.94
	IBRA Sub-region Hart	889,464.33	889,438.87	100.00	-
	Local Government Authority Shire of Halls Creek	823,035.49	823,010.04	100.00	-

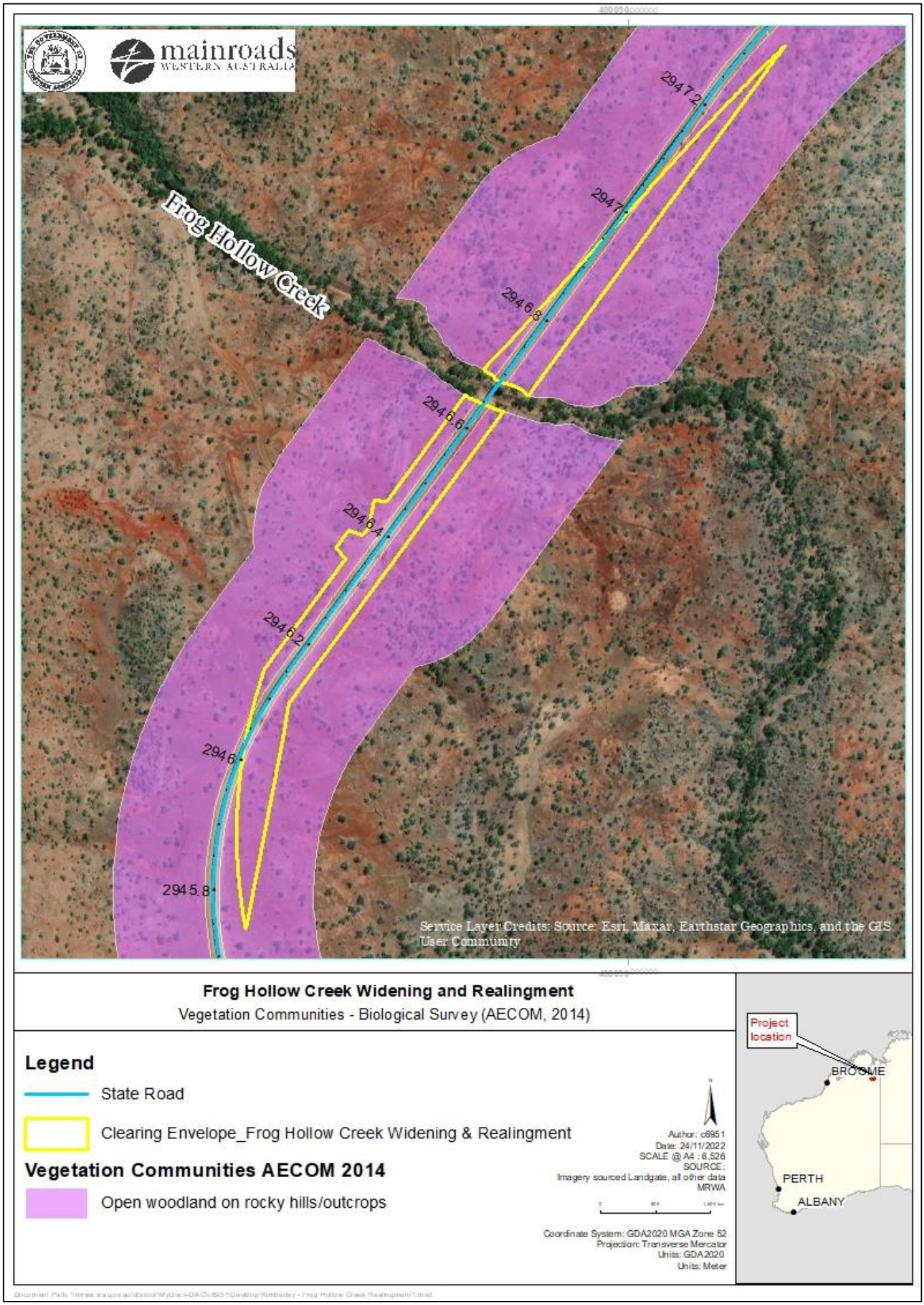

Figure 3. Vegetation Communities within Project Envelope Mapped by AECOM, (2014)

5 ASSESSMENT AGAINST THE TEN CLEARING PRINCIPLES

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

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

The proposed clearing is not likely to be at variance with the 10 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
The project requires clearing of native vegetation mostly in a very good condition. The vegetation in and around the Project Envelope is homogenous with only one vegetation community described as "Open Woodland over Speargrass on Undulating Rocky Slopes" recorded during the field survey. Similarly, only one fauna habitat described as "Medium Open Woodland of *Eucalyptus brevifolia, Corymbia opaca* and *Corymbia opacula* over Mixed Native Shrubs on Rocky Hills and Rocky Outcrops" was recorded from the Project Envelope. The vegetation community and fauna habitat recorded within the Project Envelope is common in the wider region, extending beyond the project boundary. It is therefore unlikely that the proposed clearing is locally significant. The current extent of pre-European Vegetation Association 808 mapped within the project clearing envelope is more than 99% intact at all bioregional levels. No Environmentally Sensitive Areas (ESAs), Threatened or Priority Ecological Communities (TECs/PECs) were identified from the desktop assessment or were recorded from the broader survey area during the field survey by AECOM (2014). No threatened flora species listed under the EPBC Act were recorded during the field survey by AECOM, 2014. No known DBCA records exist for threatened flora species within the Project 40 km radius Study Area. No Priority flora species listed under BC Act were recorded during the field survey. A likelihood of assessment undertaken by AECOM (2014) indicated six priority flora species as 'likely' to occur and 27 as 'may' occur within the broader survey area. Current listing status and species nomenclature have been checked and updated as required. The flora species identified in the database searches (AECOM (2014) Report and DBCA Shapefiles) that either have known records or are likely to/may occur within the project 40 km radius Study Area are listed below: • *Acacia camptocarpa* P1 • *Apowollastonia verbesinoides* P1 • *Boronia jucunda* P1 • *Cucumis sp.* Bastion Range (A.A. Mitchell et al. AAM 10710) P1 • *Echinochloa kimberleyensis* P1 • *Eucalyptus costuligera* P1 • *Heliotropium foveolatum* P1 • *Hibiscus squarrulosus* P1 • *Heliotropium uniflorum* P1 • *Iseilema trichopus* P1 • *Marsdenia hemiptera* P1 • *Micraira sp. Purnululu* (M.D. Barrett & R.L. Barrett 1507) P1 • *Sorghum plumosum* var. *teretifolium* P1 • *Pentalepis trichodesmoides* subsp. *incana* P1 • *Triodia racemigera* P1 • *Triumfetta saccata* P1

- *Acacia capillaris* P2
- *Acacia zatrichota P2*
- *Adiantum hispidulum* var. *hispidulum* P2
- *Blumea pungens* P*2*
- *Boronia minutipinna* P2
- *Dicarpidium sp. Purnululu* (K.A. Menkhorst 766) P2
- *Doodia caudata* P2
- *Eriachne imbricata P2*
- *Eucalyptus ordiana* P2
- *Grevillea psilantha* P2
- *Lindernia eremophiloides P2*
- *Solanum carduiforme* P2
- *Stephania japonica* var. *japonica* P2
- *Taenitis pinnata* P2
- *Triodia bunglensis* P2
- *Triumfetta aspera* P2
- *Acacia claviseta* P3
- *Acacia sp.* Cockburn Range (R. Pullen 10. 763) P3
- *Brachychiton tuberculatus* P3
- *Colocasia esculenta* var. *aquatilis* P3
- *Fimbristylis sieberiana* P3
- *Fuirena incrassata* P3
- *Glycine falcata* P3
- *Glycine pullenii* P3
- *Goodenia crenata* P3
- *Leptospermum madidum* subsp. *sativum* P3
- *Synostemon rigidulus* P3
- *Tephrosia sp.* Mistake Creek (A.C. Beauglehole 54424) PN P3
- *Tephrosia rosea* var. Napier Range (C.R. Dunlop 7760 & B.K. Simon) P3
- *Trachymene dusenii* P3
- *Ficus lilliputiana* P4
- *Grevillea miniata* P4

Most of the Priority species identified in the database searches have known records in Purnululu National Park Areas, located 28.8 km to the west southwest. These species are likely to be restricted to Purnululu National Park given it has a unique landscape that is not found in the Project Envelope and is a better natural habitat for these species. Other species that were assessed by AECOM as likely to occur in the broader survey area do not have known records within the 40km Study Area. As such, only the following species having known records close to Project Envelope and outside the Purnululu National Park are assessed in detail below:

- *Boronia jucunda* P1
- *Cucumis sp.* Bastion Range (A.A. Mitchell et al. AAM 10710) P1
- *Pentalepis trichodesmoides* subsp. *incana* P1
- *Goodenia crenata* P3

***Boronia jucunda* (P1)** is found on rocky areas in open Eucalypt woodland and have been recorded between Halls Creek and Kununurra (Western Australian Herbarium, 1998). The nearest record is approximately 12 km north of the Project Envelope. The species habitat may exist within the Project Envelope, however, given the species was not located within the field survey and the small-scale clearing, it is unlikely that the proposed clearing will impact the species.

***Cucumis sp.* Bastion Range (A.A. Mitchell et al. AAM 10710) (P1)** has a known record within 10 km to the northeast of the project on a footslope comprising brown silty loam over dolerite soils. The species was recorded associated with *Eucalyptus confluens* and *Corymbia greeniana* low open woodland over *Indigofera*

hirsuta low open shrubland over *Heteropogon contortus* and *Chrysopogon fallax* grassland. The associated species were described as *Abutilon hannii, Acacia holosericea* and *Cullen pustulatum* (DBCA Shapefiles, 2022). Suitable habitat for the species does not occur within the Project Envelope and was not recorded by AECOM (2014).

***Pentalepis trichodesmoides* subsp. *incana* (P1)** has known records within the 40 km Study Area and has been found to be associated with *Eucalyptus confertiflora* woodland and *Eucalyptus brevifolia* and *Triodia sp.* on skeletal soils on volcanics (DBCA Shapefiles). Suitable habitat for the species does not occur within the Project Envelope and it was not recorded by AECOM (2014).

***Goodenia crenata* (P3)** are known to occur on fine red earth, red clay in flat sandplains and sandstone outcrops (Western Australian Herbarium, 1998). The species has two known records more than 30 km from the Project Envelope. Habitat suitable for the species is present in the project clearing envelope, however, this species is known to have a relatively wide habitat preference. Given the species was not recorded during the field survey and proposed small-scale clearing, the Project is unlikely to significantly impact the species.

The Biological Survey (2014) recorded two conservation significant species from the broader Survey Area. The **Rainbow Bee-eater** (*Merops ornatus*) (EPBC Act MI) was recorded at 13 locations in the broader survey area, the nearest record being 13 km from the Project Envelope. The **Spectacled Hare-wallaby** (*Lagorchestes conspicillatus* subsp. *Leichardti)* (DBCA P4) was recorded (based on scat identification) at one location 42 km southwest of the Project Envelope. Although suitable habitat for these species exist within the Project Envelope, given the wide known distribution range of these species and the proposed small-scale clearing of fauna habitat that is well represented locally and regionally, the project is unlikely to significantly impact either of these species.

The database searches identified a number of conservation significant fauna species as likely to occur within the Study Area. AECOM (2014) assessed these species for their likelihood of occurrence based on habitat preference and latest record date. Current listing status and species nomenclature have been checked and updated as required. Fauna species including Grey Falcon, Gouldian Finch, Short-tailed Mouse, Bungle-Bungle Robust Slider, Yellow-lipped Cave Bat, Rock Ringtail Possum, Scaly-tailed Possum Oriental Plover, Glossy Ibis and Peregrine Falcon were considered 'likely' or 'may' occur in the broader Survey Area given their known nearby records. However, the Project Envelope doesn't represent core habitat for these species. No evidence of presence of Greater Bilby was recorded during the field survey. A number of species identified in the database searches as likely to occur within the Study Area are migratory and marine in nature. These species are non-breeding migrants to Australia and have a wide range of occurrence across Australia. Given the better-quality habitat in the immediate surroundings such as Purnululu National Park within 28 km distance, the majority of the species identified in the desktop assessment may only utilise the Project Envelope as a foraging visitor or in a fly over.

Given that more than 99% of the pre-European vegetation is intact, unlike other bioregions in WA, the vegetation in Kimberley is not considered heavily fragmented, and there are no islands of remnant vegetation that are currently isolated from other areas. Habitat linkage in the region is therefore not considered a significant ecological factor associated with the project.

The vegetation within the Project Envelope does not represent any TECs or PECs or represent preferred habitat for conservation significant flora and fauna. As such the proposed clearing is not considered to comprise a high level of biodiversity.

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

Methodology
ALA, (2022a & 2022b)
AECOM, (2014)
Australian Museum, (2020)

DBCA Shapefiles
DCCEEW, (2022a)
EPBC Act Protected Matters Search (Accessed 14/07/2022)
Government of Western Australia, (2019)
Main Roads GIS Shapefiles
Western Australian Herbarium, (1998)

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

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

Only one fauna habitat type was identified from the Project Envelope:

Habitat	Description	Extent within larger Survey Area	Clearing Proposed
Open woodland on rocky hills/outcrops	*Eucalyptus brevifolia, Corymbia opaca* and *Corymbia opacula* medium open woodland over mixed native shrubs on rocky hills and rocky outcrops.	958 ha	5.6 ha (0.6%)

As evident from the table above, the fauna habitat is widespread throughout the larger survey area and the proposed clearing represents only a small fraction (0.6%) of the mapped habitat within the broader survey area. Additionally, extensive areas of further unmapped habitat occurs adjacent to the Survey area, and as such, the percentage of clearing on a regional scale is far less than outlined.

The Biological Survey (AECOM, 2014) recorded two conservation significant species from the broader survey area:

- Rainbow Bee-eater *Merops ornatus* (EPBC Act MI)
- Spectacled Hare-wallaby *Lagorchestes conspicillatus* subsp. *Leichardti* (DBCA P4)

The **Rainbow Bee-eater** (*Merops ornatus*) was recorded at 13 locations in the broader Survey Area, the nearest record being 13 km from the Project Envelope. It is a common species which occupies in numerous habitats including open woodlands with sandy loamy soil, sand ridges and pits, beaches, cliffs, mangroves, and rainforests. Burrows are typically recorded in flat or sloping ground in a variety of locations such as riverbanks, roadside cuttings, creeks and dam walls. The species may utilise habitat within the Project Envelope including cleared areas where it may feed on flying insects. However, given the wide known distribution range and proposed small-scale clearing, the project is unlikely to significantly impact the species.

The **Spectacled Hare-wallaby** (*Lagorchestes conspicillatus* subsp. *leichardti)* was recorded (based on scat identification) at one location within the broader survey area, 42 km southwest of the Project Envelope. The species is a medium sized inhabitant of tropical grasslands and may utilise suitable habitat within the Project Envelope. However, the habitat within the Project Envelope is well represented in the local and regional area. Proposed clearing is therefore not expected to have a significant impact on the availability or maintenance of habitat for the species.

A likelihood of occurrence of all conservation significant flora species identified in the database searches was assessed based on their habitat and latest record date in the Biological Survey Report. Current listing status and species nomenclature have been checked and updated as required. The conservation significant species considered by AECOM (2014) as 'likely' or 'may' occur in the greater Survey Area are:

- *Falco hypoleucos* Grey Falcon (VU)
- *Macrotis lagotis* Greater Bilby (VU)
- *Erythrura gouldiae* Gouldian Finch (P4)

- *Lerista bunglebungle* Bungle-Bungle robust slider (P2)
- *Vespadelus douglasorum* Yellow-lipped cave bat (P2)
- *Petropseudes dahli* Rock ringtail possum (P3)
- *Leggadina lakedownensis* Short-tailed Mouse (P4)
- *Wyulda squamicaudata* Scaly-tailed possum (P4)
- *Actitis hypoleucos* Common Sandpiper (MI)
- *Apus pacificus* Fork-tailed Swift (MI)
- *Charadrius veredus* Oriental Plover (MI)
- *Glareola maldivarum* Oriental Pratincole (MI)
- *Plegadis falcinellus* Glossy Ibis (MI)
- *Falco peregrinus* Peregrine Falcon (OS)

Grey Falcon may utilise habitat within the Project Envelope, with the nearest known DBCA record 30 km southeast of the Project in the Purnululu National Park. However, given the wide known distribution range for the species and more suitable habitat outside the Project Envelope, the project is unlikely to have significant impact to the species habitat.

Greater Bilby may utilise habitat within the Survey Area, however, is unlikely to prefer habitat within the Project Envelope. No evidence of the species was recorded during the field survey. Habitat preferences for the species range from open tussock grassland on uplands and hills, mulga woodland/shrubland on ridges and rises and hummock grassland growing on sandplains and dunes, drainage systems, salt lake systems and other alluvial areas (TSSC 2016a; DBCA 2017). As the species is a burrower, softer substrates are required. The clearing envelope was mapped by AECOM as 'Open woodland on rocky hills/outcrops'. Soil subsystem mapping from DPIRD shows that the area is mapped as the O'Donnell granitic plains subsystem, described as 'level to undulating low plains on granite – red or brown shallow loamy or sandy suplexes" (DPIRD 2019). Observations on site confirm that the area consists of shallow or skeletal red-brown loams over rock. Based on known burrowing behaviour, the Project Envelope is unlikely to be suitable burrowing habitat. There are no known DBCA records of the species within the 40km Study Area. Given the wide distribution range of the species and more suitable habitat for the species located outside the project boundary, it is unlikely that Bilby will utilise the Project Envelope.

Gouldian Finch was not recorded during the field survey however, DBCA records indicate the species was recorded in Frog Hollow Creek in 2003. Another record from 2015 occurs four kilometres to the north. Gouldian finches breed on rocky hills with hollow bearing smooth barked eucalypts, within two to four kilometres of small waterholes and springs (O'Malley 2005; Brazil-Boast et al. 2011; DEPWS 2021). The species forages mainly on annual sorghum grasses, switching to a number of other species in the wet season (O'Malley 2005). The Project Envelope sits within a valley plain between rocky hills (DPIRD 2019). Based on data collected by AECOM, the only smooth barked eucalypt to occur in these areas are *Eucalyptus camaldulensis* and *Eucalyptus brevifolia* (AECOM 2014). Gouldian finches are not known to use *E. camaldulensis*, which is a riparian species and therefore unlikely to be located within the Proposal Envelope(Brazil-Boast et al. 2011; Brazil-Boast, Pryke and Griffith 2010; Radford et. al. 2021; DEPWS 2021). Although *E. brevifolia* is a suitable hollow bearing species, the Project Envelope sits within a valley plain landform and not hills (DPIRD 2019), therefore making it unsuitable for breeding (O'Malley 2005; DEPWS 2021).

The Project Envelope contains suitable foraging habitat, and the presence of the record in Frog Hollow Creek indicates that there may be suitable breeding habitat in the hills surrounding the valley plains. Gouldian finches are often seen on Violet Valley Station, four kilometres to the north of the Project Envelope (J. Rao pers. comm.). The species is considered to possibly only be an occasional transient visitor to the Project Envelope during foraging.

However, the Threatened Species Scientific Committee list the only threat to the species as grazing pressure on foraging habitat. The limited, spatially restricted clearing proposed is not listed as a threat to the species (TSSC 2016b). Grazing has the potential to act on a longer timescale at a landscape level, unlike the potential

short-term impacts from the minor scale clearing proposed for this project. As such, the proposed clearing is unlikely to have significant impact on the species.

Short-tailed Mouse occurs in the Woodland, Grassland and Rocky Outcrop habitats (AECOM, 2014). The species was not recorded during the field survey. It was considered likely to occur in the Survey Area given the known records within the 40 km Study Area (the nearest record is 25 km east of the Project Envelope) and availability of habitat in the Survey Area. The impacts to the species due to project are unlikely to be significant given the small-scale clearing and more suitable habitat for the species which occurs outside the Project Envelope.

Bungle-Bungle Robust Slider are known from Purnululu National Park. There are three records of the species approximately 40 km from Project Envelope within the Purnululu National Park area. The species was not recorded during the field survey. The species favours the unique habitat found within the Purnululu National Park. As this habitat is not present within the Project Envelope, it is unlikely that the proposed clearing will impact the species.

Yellow-lipped Cave Bat are mostly found in areas of the Kimberley region that receive more than 800 mm of annual rainfall. They roost in sandstone and limestone caves (Australian Museum, 2020). There is one record of the species 36 km south of the project location. There are no caves within the Project Envelope and whilst they may forage in the area, the proposed impacts are not considered significant.

Rock Ringtail Possum lives exclusively in rocky outcrops and prefers areas with large boulders and deeply fissured rock. They have a high level of adaptation to a terrestrial existence (ALA, 2022a). There are two records of the species more than 25 km from Project Envelope in the Purnululu National Park. The project is within its known distribution range, however, no suitable habitat for the species exists with the Project Envelope.

Scaly-tailed Possum shelters exclusively in rocks and is found in the high rainfall area coastal regions of the north Kimberley (ALA, 2022b). There are five records of the species within the 40 km Study Area, the nearest being 2.7 km north of the project location. The project is within their known distribution range, however, no suitable habitat for the species occurs within the Project Envelope.

Common Sandpiper, **Fork-tailed Swift**, **Oriental Plover**, **Oriental Pratincole**, **Glossy Ibis** and **Peregrine Falcon** are migratory species with a wide range of habitats. They utilise coastal and inland wetlands, mudflats, swamps, creeks, open woodlands etc. Given their wide distribution and lack of suitable habitat within the Project Envelope, the proposed clearing is not likely to have a significant impact on these species.

A search of the PMST identified following species of conservation significance likely to occur within the 40 km Study Area:

- *Macroderma gigas* Ghost Bat (VU)
- *Trichosurus vulpecula arnhemensis* Northern Brushtail Possum (VU)
- *Calidris ferruginea* Curlew Sandpiper (CR)
- *Pezoporus occidentalis* Night Parrot (EN)
- *Polytelis alexandrae* Princess Parrot (P4)

None of these species were recorded during the field survey nor they have known DBCA records within the Study Area. These species have a wide range of known distribution and occur in a variety of habitats. The Project Envelope does not represent their core habitat and given the small-scale clearing, significant impact to the species or species habitat because of project clearing is unlikely.

AECOM (2014) noted that discussions with DPaW Kununurra Officers confirmed that no Threatened species were known to occur within the Survey Area.

The fauna habitat recorded within the Project Envelope was one of the most common habitats within the broader survey area of 6,625 ha. The fauna habitat located within the Project Envelope may display suitability

for many of the species discussed above, however, is not considered to be core habitat or significant for these species.

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

Methodology
ALA, (2022a & 2022b)
AECOM, (2014)
Australian Museum, (2020)
DBCA Shapefiles
DCCEEW, (2022a)
EPBC Act Protected Matters Search (Accessed 14/07/2022)

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

Proposal is not at variance to this Principle

No threatened rare flora species listed under the EPBC or BC Acts were recorded from the broader survey area during the April 2014 biological survey by AECOM. No previous DBCA records exist for threatened flora species within the Project 40km radius Study Area. For these reasons, it is considered unlikely that any Threatened flora species occurs within the Project Envelope.

Given the above, the project is not at variance with this Principle.

Methodology
DBCA shapefiles
AECOM (2014)
EPBC Act Protected Matters Search (Accessed 14/07/2022)

(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

No state or Commonwealth listed Threatened Ecological Communities (TECs) were identified from the desktop assessment or recorded during the field survey by AECOM, 2014. As such, no TEC will be impacted by the project activities.

The proposed clearing is not at variance with this Principle.

Methodology
DBCA shapefiles
AECOM (2014)
EPBC Act Protected Matters Search (Accessed 14/07/2022)

(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

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

Pre-European Vegetation Association	Clearing Description	Vegetation Condition	Comments
Vegetation Association 808 described as Grasslands, curly spinifex, low tree savanna; snappy gum over curly spinifex (Government of Western Australia, 2019)	Clearing of up to 5.6 ha in 7.4 ha Project Envelope for road widening and realignment works along Great Northern Highway at Frog Hollow Creek, Shire of Halls Creek.	Very Good (Keighery, 1994)	Vegetation description and condition determined from "AECOM (2014), Great Northern Highway SLK 2897-3008 Biological Survey 2014".

Table 3. Pre-European Vegetation Representation

Pre-European Vegetation Association	Scale	Pre–European (ha)	Current Extent (ha)	% Remaining	% Remaining in DBCA reserves
Veg Assoc No. 808	**Statewide**	1,201,800.25	1,201,483.04	99.97	0.88
	IBRA Bioregion Central Kimberley	1,128,243.76	1,128,218.30	100.00	0.94
	IBRA Sub-region Hart	889,464.33	889,438.87	100.00	-
	Local Government Authority Shire of Halls Creek	823,035.49	823,010.04	100.00	-

As evident from the table above, the current extent of Vegetation Association 808 is more than 99% intact at all scales. As such, the project is not located in an area with a regionally significant remnant vegetation. As the vegetation association is widespread throughout the area and is very well represented locally and regionally, impacts associated with the small scale clearing of 5.6 ha are not likely to be significant.

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

Methodology
Keighery, (1994)
Government of Western Australia, (2019)
Main Roads Pre-European Vegetation Mapping

(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

The vegetation community within the Project Envelope was mapped as Open Woodland over Speargrass on undulating rocky slopes described as *Eucalyptus limitaris, Eucalyptus camaldulensis subsp. obtusa* and *Eucalyptus brevifolia* medium woodland over *Hakea macrocarpa, Gardenia pyriformis* subsp. *pyriformis* and *Indigofera colutea* low to tall open shrubland over *Heteropogon contortus, Aristida latifolia* and *Sehima nervosum* tall tussock grassland.

No vegetation within the Project Envelope is representative of riparian vegetation and no vegetation growing in, or in association with a watercourse or wetland will be cleared.

Based on the above, the project is not at variance to this principle.

Methodology
DWER and DBCA shapefiles
AECOM (2014)

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

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

The project falls within O'Donnell Land system which is described as "*Stony undulating country with scattered hills, loamy skeletal soils, open woodlands with ribbon grass pastures and restricted cracking clay plains*". The system supports grass pastures which are highly preferred by cattle and prone to degradation (Schoknecht, N, and Payne, A L., 2011). The project is in an area prone to severe rainfall events during the wet season due to cyclones and long dry periods, which could contribute to land degradation via flooding and erosion.

Clearing works will be completed in the dry season and no interaction with groundwater or interruption of natural surface water flows will occur. Given the project is predominately infill with no disturbance to surface water or groundwater, it is unlikely that water erosion and waterlogging will be a significant issue.

Only 5.6 ha of native vegetation is proposed to be cleared as part of the proposed works. This quantity of vegetation is minimal when considered in the context of the remaining quantity of vegetation located within and adjacent to the Project as well as the wider area. Removal of relatively linear areas of vegetation along the highway and given that the cleared area will mostly be sealed, the clearing is unlikely to cause serious soil erosion, salinity or nutrient export.

The Project Envelope is located within an area mapped as cq(p4) - extremely low probability of occurrence of Acid Sulphate Soils and unlikely to cause significant impacts.

The project will operate under Main Roads Standard Construction Environmental Management Plan (CEMP) and any land degradation issues such as erosion, flooding will be effectively managed through the implementation of standard and project specific management practices.

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

Methodology
AECOM, (2014)
CSIRO, (2014)
DPIRD, (2019)

Schoknecht, N, and Payne, A L., (2011)

(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
There are no Environmentally Sensitive Areas (ESAs), Nature Reserves or any other conservation areas within or in close proximity to the Project Envelope. The nearest conservation reserve is Purnululu Conservation Reserve, which is located more than 19 km to the east of the project location, and comprises land surrounding the Purnululu National Park. The nearest ESA boundary, which is likely to be associated with Purnululu National Park, Conservation Reserve and associated buffer, is located more than 2.5 km to the East. As such, clearing will not have an impact on the environmental values of any conservation areas. Based on the above, the proposed clearing is not at variance to this principle.
Methodology DBCA shapefiles - Legislated Lands and Waters

(i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.

Proposed clearing is not likely to be at variance to this Principle
The project is located within the Ord River and Tributaries/ Ord Irrigation District and Groundwater Area and Canning-Kimberley Groundwater Area, both of which are Proclaimed Water Areas. No clearing under this application is proposed within the Frog Hollow Creek. Water requirements for the project will be sourced from Main Roads approved licensed bores. No dewatering, no changes to surface water flows or disturbance to groundwater and no clearing of vegetation associated wetland or watercourse will occur. The project will adhere to Main Roads Standard CEMP to ensure the proposed works will not disturb the watercourse and interrupt the natural surface water flows. The CEMP will also have appropriate provisions to manage possible contamination risk as such as spill incidents due to fuel leakage during on-ground works and no refuelling and maintenance will occur within 100 m of Frog Creek As such the deterioration of quality of surface and groundwater from sedimentation, erosion, or spill contamination because of project activities is unlikely. Based on the above, the project is unlikely to be at variance to this Principle.
Methodology ARCGIS shapefiles- Watercourse DWER- Shapefiles

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

Proposed clearing is not likely to be at variance to this Principle
The subregional climate is described as dry winter and hot semi-arid summer with an average annual rainfall of 663.9 mm (Site ID- 2050) (BoM, 2022). Extreme weather events are a significant component of the Kimberley climate. Tropical cyclones and tropical storms can bring heavy and sustained rainfall, particularly

in the months leading up to and during the wet season. It is common for a large proportion of the Region's rainfall to be recorded in one single event, leading to extensive flooding of rivers, creeks and roadways.

The proposed clearing will take place in the dry season with the Main Roads standard measures for environmental management in place during on ground works to avoid or escalate flooding or waterlogging. The clearing is linear along the existing road and is within a region where the pre-European level of native vegetation is widespread. As such, the project is unlikely to cause or exacerbate the incidence or intensity of flooding. As noted above, climatic conditions are the main factor influencing flooding and the removal of a relatively small amount of vegetation in this setting will have no measurable influence on flood regimes in the area.

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

Methodology
BOM (Accessed 24/03/2020)

6 ADDITIONAL ACTIONS REQUIRED

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

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

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

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

7 STAKEHOLDER CONSULTATION

Main Roads has undertaken stakeholder consultation with local cultural groups- Malarngowem People and Yurriyangem People and the Shire of Halls Creek in accordance with CPS 818/15 Condition 8.

8 VEGETATION MANAGEMENT

Main Roads will avoid clearing native vegetation where possible. Where clearing cannot be avoided then clearing will be kept to a minimum.

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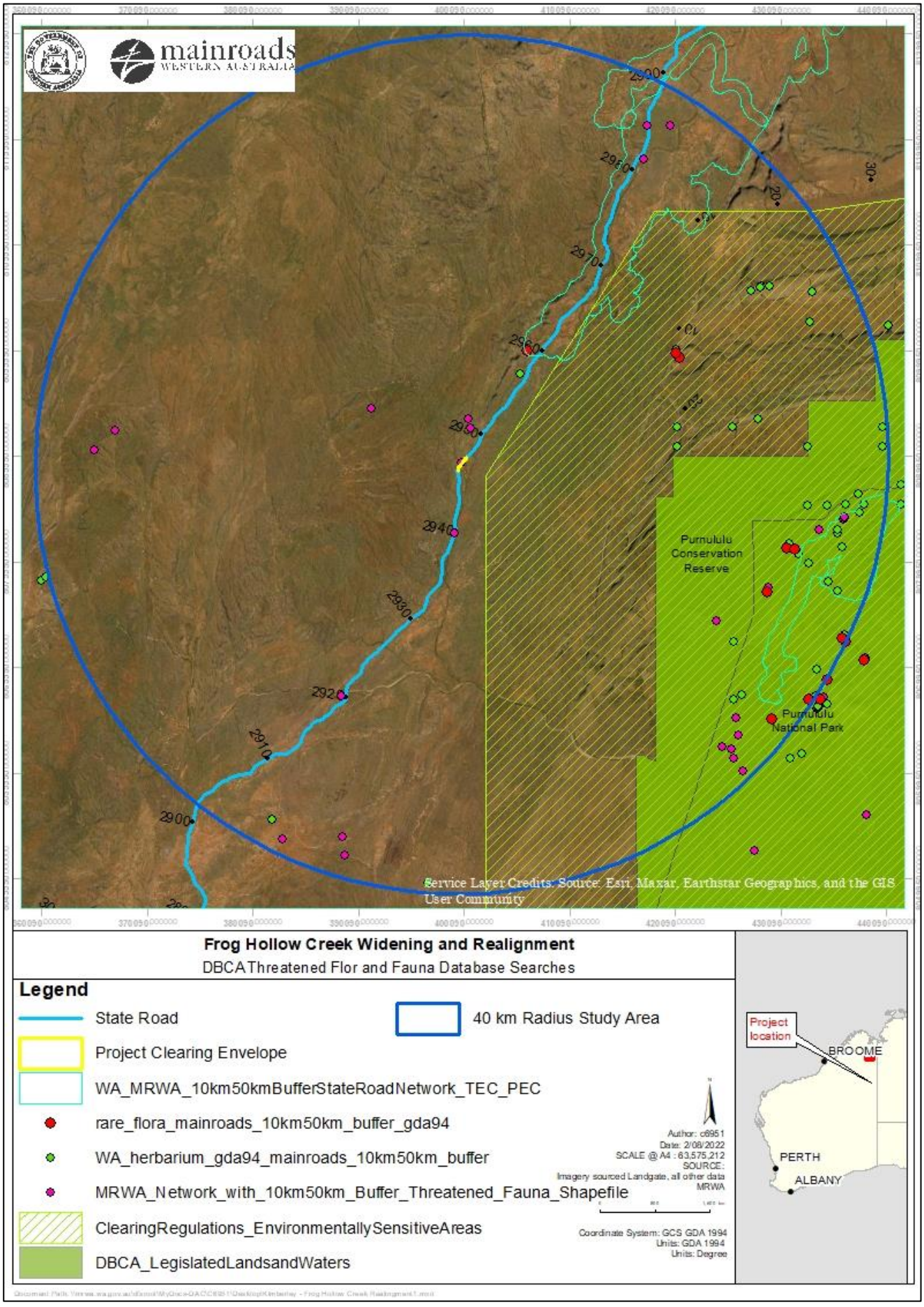
10 APPENDICES

Appendix	Title
Appendix 1	DBCA Threatened Flora and Fauna Database Searches
Appendix 2	EPBC Act Protected Matters Search Report

Appendix 1: DBCA Threatened Flora and Fauna Database Searches


mainroads
WESTERN AUSTRALIA
2900
2910
2920
2930
2940
2950
2960
2970
Purnululu Conservation Reserve
Purnululu National Park
Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community
Frog Hollow Creek Widening and Realignment
DBCA Threatened Flor and Fauna Database Searches
Legend
State Road
40 km Radius Study Area
Project Clearing Envelope
WA_MRWA_10km50kmBufferStateRoadNetwork_TEC_PEC
rare_flora_mainroads_10km50km_buffer_gda94
WA_herbarium_gda94_mainroads_10km50km_buffer
MRWA_Network_with_10km50km_Buffer_Threatened_Fauna_Shapefile
ClearingRegulations_EnvironmentallySensitiveAreas
DBCA_LegislatedLandsandWaters
Author: c6951
Date: 2/08/2022
SCALE @ A4 : 63,575,212
SOURCE:
Imagery sourced Landgate, all other data MRWA
Coordinate System: GCS GDA 1994
Units: GDA 1994
Units: Degree
Project location
BROOME
PERTH
ALBANY

Appendix 2: EPBC Act Protected Matters Search Report

Australian Government
Department of Agriculture, Water and the Environment

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 14-Jul-2022

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	1
National Heritage Places:	1
Wetlands of International Importance (Ramsar	2
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	14
Listed Migratory Species:	15

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at http://www.environment.gov.au/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	20
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	2
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	1
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

World Heritage Properties		[Resource Information]
Name	State	Legal Status
Purnululu National Park	WA	Declared property

National Heritage Places		[Resource Information]
Name	State	Legal Status
Natural		
Purnululu National Park	WA	Listed place

Wetlands of International Importance (Ramsar Wetlands)	[Resource Information]
Ramsar Site Name	Proximity
Lakes argyle and kununurra	30 - 40km upstream from Ramsar site
Ord river floodplain	100 - 150km upstream from Ramsar site

Listed Threatened Species		[Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Erythrotriorchis radiatus		
Red Goshawk [942]	Vulnerable	Species or species habitat may occur within area
Erythrura gouldiae		
Gouldian Finch [413]	Endangered	Species or species habitat known to occur within area
Falco hypoleucos		
Grey Falcon [929]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Falcunculus frontatus whitei		
Crested Shrike-tit (northern), Northern Shrike-tit [26013]	Vulnerable	Species or species habitat likely to occur within area
Malurus coronatus coronatus		
Purple-crowned Fairy-wren (western) [64442]	Endangered	Species or species habitat may occur within area
Pezoporus occidentalis		
Night Parrot [59350]	Endangered	Species or species habitat may occur within area
Polytelis alexandrae		
Princess Parrot, Alexandra's Parrot [758]	Vulnerable	Species or species habitat may occur within area
Rostratula australis		
Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Tyto novaehollandiae kimberli		
Masked Owl (northern) [26048]	Vulnerable	Species or species habitat may occur within area
MAMMAL		
Macroderma gigas		
Ghost Bat [174]	Vulnerable	Species or species habitat likely to occur within area
Macrotis lagotis		
Greater Bilby [282]	Vulnerable	Species or species habitat may occur within area
Trichosurus vulpecula arnhemensis		
Northern Brushtail Possum [83091]	Vulnerable	Species or species habitat may occur within area
SHARK		
Pristis pristis		
Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		

Scientific Name	Threatened Category	Presence Text
[Apus pacificus](#) Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Marine Species		
[Crocodylus porosus](#) Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
[Pristis pristis](#) Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area
Migratory Terrestrial Species		
[Cecropis daurica](#) Red-rumped Swallow [80610]		Species or species habitat may occur within area
[Cuculus optatus](#) Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area
[Hirundo rustica](#) Barn Swallow [662]		Species or species habitat may occur within area
[Motacilla cinerea](#) Grey Wagtail [642]		Species or species habitat may occur within area
[Motacilla flava](#) Yellow Wagtail [644]		Species or species habitat may occur within area
Migratory Wetlands Species		
[Actitis hypoleucos](#) Common Sandpiper [59309]		Species or species habitat may occur within area
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
[Calidris melanotos](#)		
Pectoral Sandpiper [858]		Species or species habitat may occur within area
[Charadrius veredus](#)		
Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area
[Glareola maldivarum](#)		
Oriental Pratincole [840]		Species or species habitat may occur within area
[Pandion haliaetus](#)		
Osprey [952]		Species or species habitat likely to occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Bird		
[Actitis hypoleucos](#)		
Common Sandpiper [59309]		Species or species habitat may occur within area
[Anseranas semipalmata](#)		
Magpie Goose [978]		Species or species habitat may occur within area overfly marine area
[Apus pacificus](#)		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
[Bubulcus ibis as Ardea ibis](#)		
Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area
[Calidris acuminata](#)		
Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
Cecropis daurica as Hirundo daurica Red-rumped Swallow [80610]		Species or species habitat may occur within area overfly marine area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat known to occur within area overfly marine area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area overfly marine area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area overfly marine area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Hirundo rustica Barn Swallow [662]		Species or species habitat may occur within area overfly marine area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Motacilla cinerea		
Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area
Motacilla flava		
Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area
Pandion haliaetus		
Osprey [952]		Species or species habitat likely to occur within area
Rostratula australis as Rostratula benghalensis (sensu lato)		
Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area
Reptile		
Crocodylus johnstoni		
Freshwater Crocodile, Johnston's Crocodile, Johnstone's Crocodile [1773]		Species or species habitat may occur within area
Crocodylus porosus		
Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area

Extra Information

State and Territory Reserves		[Resource Information]
Protected Area Name	Reserve Type	State
Purnululu	National Park	WA
Purnululu Conservation Reserve	5(1)(g) Reserve	WA

EPBC Act Referrals			[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Copernicus Nickel Mining Project	2007/3621	Not Controlled Action	Completed

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact Us page.

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