Clearing Assessment Report – CPS 818

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Bridges 0753/0754 Replacement and Realignment
Northam Pithara Road (M032)
Wheatbelt Region
EOS Project Number: 2122

D24#34879
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1 PROPOSAL

1.1 Purpose and Justification

Northam Pithara Road (M032) forms part of an inter-regional route between the Wheatbelt and Mid-West Gascoyne regions and connects Perth-Darwin (Great Northern Highway) and Perth-Adelaide (Great Eastern Highway) corridors. The road provides inter-town access between Northam and Pithara, including the towns of Goomalling and Wongan Hills, for commuter traffic and services as an agricultural freight route for the surrounding farming industry. Existing traffic count data sourced from the Main Roads WA TrafficMap identified that Heavy Vehicles comprised 22.5% road traffic, taken from the closet source along M032 at SLK 3.83.

The existing Mortlock River Bridge (No. 0753) on Northam Pithara Road is currently under load restrictions due to deterioration of the structural components. Mallabine Creek Bridge (No. 0754) at SLK 5.31 has the same structure type and age as Mortlock River Bridge. Due to age, poor conditions and limiting load capacity; both bridges have been proposed for replacement.

The existing road tie-ins of these bridges have sub-standard horizontal geometry on the northern & southern ends and the northern road tie-in connects to a Railway Crossing on a skew angle. A total of three incidents were noted near the intersection (Main Roads WA Open Data). No fatalities were noted however the incidents resulted in two Property Damage Only (PDO) Major and one Medical.

Main Roads intends to upgrade the road geometry including relocation of the railway crossing in conjunction with the bridge replacement works. As part of the proposed realignment, the Northam Pithara Road – Southern Brook Road intersection is to tie in with the works and upgraded to current standards and guidelines.

The project objectives are summarised as follows:

- Improve the road safety and serviceability by improving the road geometry, intersection geometry, cross section elements and drainage as per current Main Roads standards.
- Improve the road safety and serviceability by providing safe bridge structures as per current Main Roads standards.
- Provide access to Restricted Access Vehicle (RAV) 7 category of heavy vehicles on Northam Pithara Road and access to RAV 4 category of heavy vehicles at the Southern Brook Intersection.
- Reduce maintenance costs due to aging bridges.

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 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 replace the Mortlock River Bridge (No. 0753) and Mallabine Creek Bridge (No. 0754) on the Northam Pithara Road and upgrade the road geometry, including relocation of the railway crossing. The Proposal will comprise the following components:

- Road realignment to meet current standards (10 m width on a 10 m formation).
- Replacement of the existing two bridges 0753 and 0754 with Bridge 0753A (100 m long, 5 span, 12.24 m wide concrete plank bridge), and Bridge 0754A (8 x 1200 mm HDPE culverts), both on the new alignment.
- Relocation of the existing rail level crossing to suit the new alignment.
- Relocation of services (Water Corporation and Telstra) - as required.
- New agricultural fencing where the road reserve is adjacent to private property.
- Demolition of the existing bridges 0753 and 0754.
- Extended road safety barriers at 0754.

1.3 Proposal Location

The Clearing Area is located on Northam Pithara Road (M032) 4.47 – 5.85 SLK, Northam, Shire of Northam as shown in Figure 1. The central coordinate of the proposal is 116.6901745, -31.6093821.

1.4 Clearing Details

Proposed Clearing to be undertaken using CPS 818:
1.394 ha

Areas of Native Vegetation Clearing:
The areas of native vegetation to be cleared are shown in Figure 1.

Type of Native Vegetation:

The types of vegetation to be cleared under this Proposal are:

- ElHpOF: *Eucalyptus loxophleba* subsp. *loxophleba* and *Hakea preissii* mid open forest on valley floors. This vegetation type is dominated by York gum, with an understorey of native shrubs and weeds.
- CoErMrOF: *Casuarina obesa*, *Eucalyptus rudis* subsp. *rudis* and *Melaleuca rhaphiophylla* mid open forest, representing riparian vegetation due to its proximity to the drainage line and species present.
- Isolated Trees and shrubs of unknown species in cleared paddock.

Figure 1. Clearing Area

Figure 2. Vegetation within Clearing Area

1.5 Alternatives to Native Vegetation Clearing Considered During Proposal Development

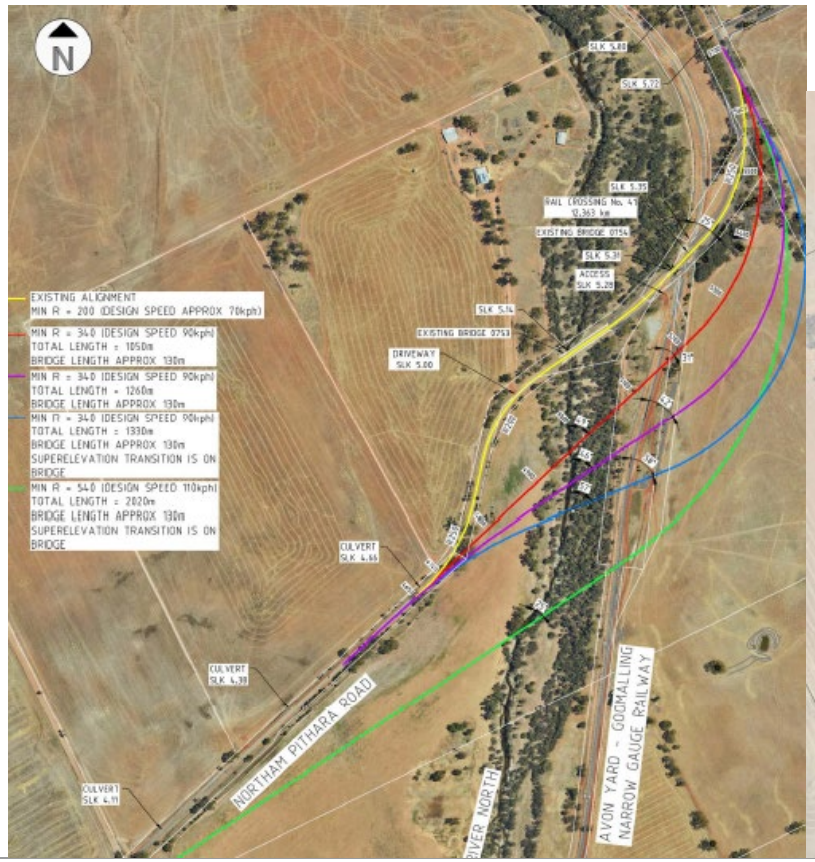
The following alternatives to clearing were considered during the development of the proposal:

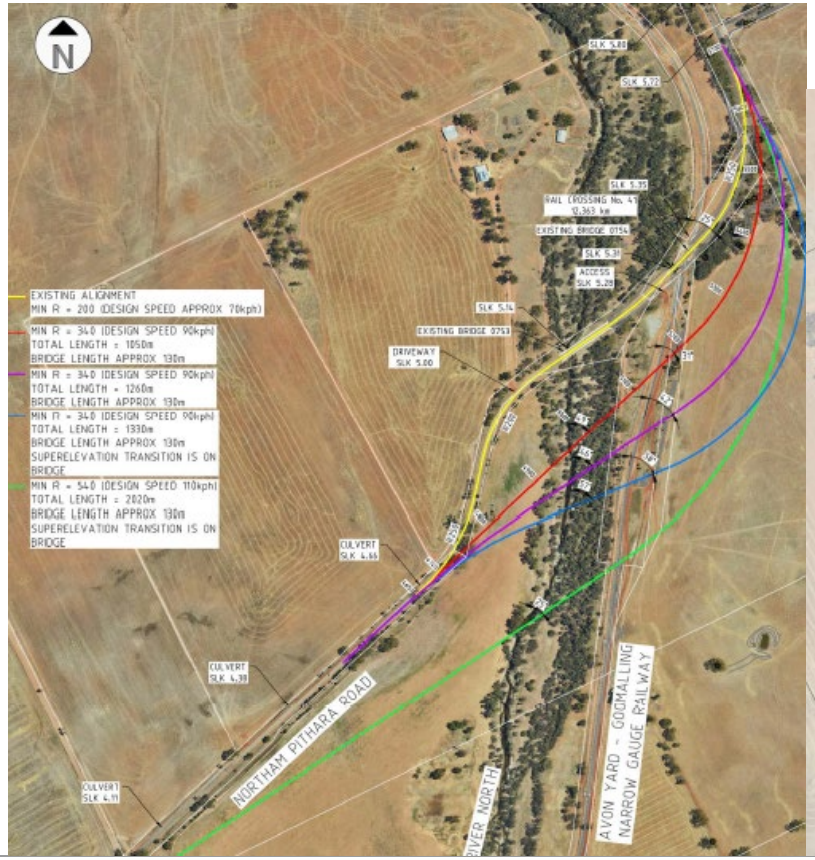
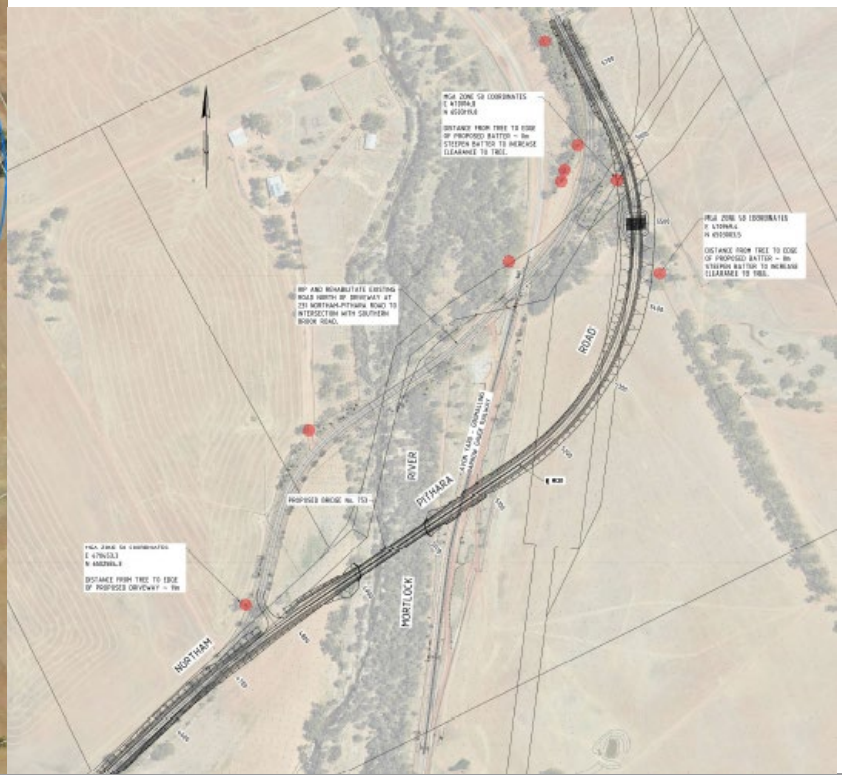
- Do not upgrade the road, however this will potentially result in a poorer safety outcome and may result in future fatalities or serious injuries and further degradation of the State road asset.
- Main Roads retains frangible vegetation where a clear zone is to be established for road projects. For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

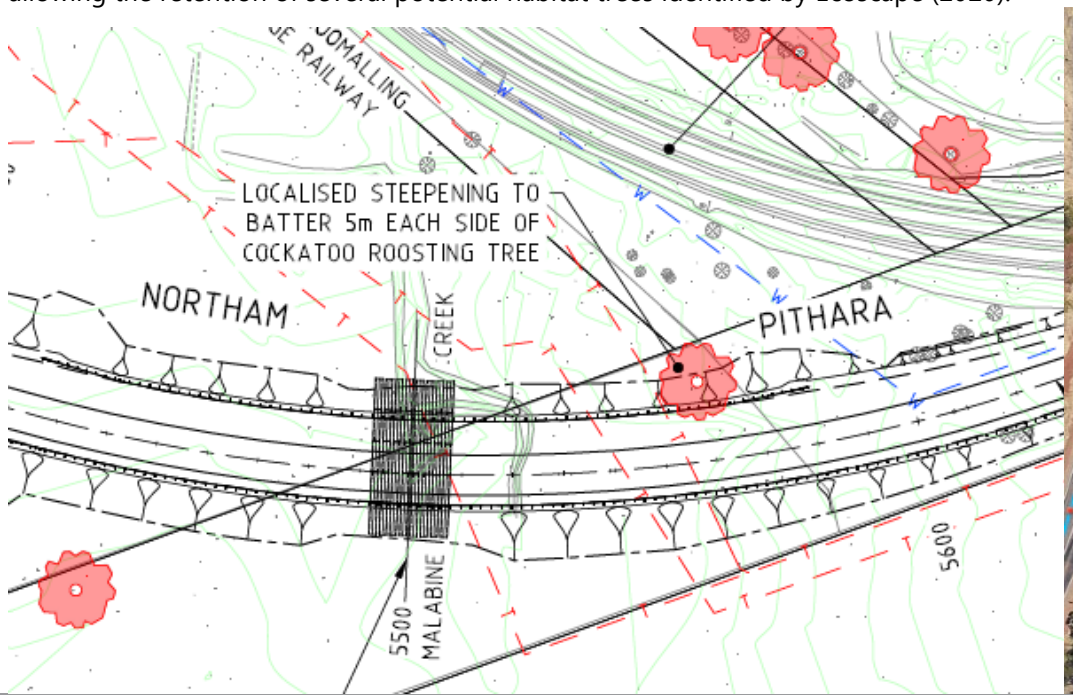
1.6 Measures to Avoid, Minimise, Reduce and Manage Proposal Clearing Impacts

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

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

Design or Management Measure	Discussion and Justification
Alignment to one side of existing road	Alignment to one side of the existing road may have resulted in the removal of greater quantities of mature trees and would not resolve the sub-standard geometry. At the concept stage, four road alignments were considered, as shown in the first image below. As part of the 15% design development, Environment Branch provided the locations of mapped fauna habitat trees to the designer, depicted by the red markings in the second image. The road alignment was amended to minimise impacts to native vegetation and avoid potential habitat trees where possible, as shown in the second image. 

Design or Management Measure	Discussion and Justification
Alternative alignment located within pasture or degraded areas	At the concept stage, four road alignments were considered, as shown in the first image below. As part of the 15% design development, Environment Branch provided the locations of mapped fauna habitat trees to the designer, depicted by the red markings in the first image. The road alignment was amended to minimise impacts to native vegetation and avoid potential habitat trees where possible, as shown in the second image. Land acquisition discussions with adjacent landowners has commenced, with the proposed realignment for Northam Pithara Road predominantly located on cleared pasture. A total of 4.12 ha of the Proposal footprint will not require impacts to native vegetation.  

Design or Management Measure	Discussion and Justification
Simplification of design to reduce number of lanes and/or complexity of intersections	The road design consists of one 3.5m wide traffic lane and a 1.5 m sealed shoulder in each direction. As the realignment design is for a single lane single carriageway, the road and seal width cannot be further reduced whilst retaining the necessary safety benefits. The Southern Brook Road intersection has been simplified to consist of one 4.0m wide traffic lane and a 1.0 m unsealed shoulder in each direction to accommodate the RAV 4 design vehicle.
Steepen batter slopes and installation of barriers	Road safety barrier at bridge 754A has been extended on the LHS departure, which will enable steep batters to be constructed, thereby allowing the retention of several potential habitat trees identified by Ecoscape (2020).  
Installation of kerbing	At a posted speed of 90km/hr, installation of kerbing could pose a hazard for this alignment due to the high risk of an errant vehicle being lifted when hitting the kerb.

Design or Management Measure	Discussion and Justification
Use of existing cleared areas for access tracks, construction storage and stockpiling	Existing cleared areas have been considered for access over vegetated areas, as shown below. All ancillary activities, such as site offices, laydown areas, storage areas, materials extraction and new fencing will be restricted to existing cleared areas, such as utilising cleared farmland close to the project.   Existing access track from Northam Pithara Road to Bridge 0753A works area.

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 and D Act)
- *Soil and Land Conservation Act 1945* (WA)
- *Rights in Water and Irrigation Act 1914* (WA) (RIWI Act)
- *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 2021)
- 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.
- Referral guideline for 3 WA threatened black cockatoo species (DAWE, 2022)

2 SCOPE AND METHODOLOGY ASSESSMENT OF CLEARING

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.

- **Study Area** – Area covered by the Consultant's Desktop Assessment. The Study Area for the Proposal is confined to a local area of a 20 km radius.

- **Survey Area** – Area covered by the Biological Survey, which is typically larger than the Clearing Area.

2.2 Desktop Assessment

A desktop assessment of the Clearing 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 ArcMap and/or Main Roads corporate mapping system known as iMaps. Referencing of the GIS layers accessed is done under the relevant methodology section of each clearing principle. Government managed databases were searched to locate additional information, which are found under References in Section 9.

2.3 Surveys and Assessments

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

- Northam Pithara Road Bridge Replacement - Bridge 0753 0754 - Dieback Assessment (Glevan, 2021).
- Possible Black Cockatoo Calyptorhynchus spp. Hollow Assessment, Bridges 0753 and 0754, Northam (Kirkby, 2020).
- Northam Pithara Road Bridges 0753 and 0754 Replacement Biological Survey (Ecoscape, 2020).

Biological and targeted surveys conducted for the proposal are outlined in Table 2 and a summary of the findings in these reports are presented in Sections 3.1 to 3.3.

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

Consultant and Survey Name	Survey Details
Glevan (2021) Northam Pithara Road Bridge Replacement - Bridge 0753 0754 - Dieback Assessment	**Survey Area:** The Survey area comprised approximately 25.44 ha adjacent to Northam Pithara Road between the towns of Northam and Pithara (SLK 4.7 to 5.7). **Type:** Dieback survey to assess the Clearing Area for the presence of dieback. **Timing:** Fieldwork was conducted on 24 February 2021 **Survey Results Shapefile TRIM Ref:** D21#522589 **Document TRIM Ref:** D21#522588
Tony Kirkby (2020) Possible Black Cockatoo Calyptorhynchus spp. Hollow Assessment, Bridges 0753 and 0754, Northam	**Survey Area:** The Survey area comprised of ten potential Black Cockatoo breeding hollows located at bridges 0753 (SLK 5.14) and 0754 (SLK 5.31) on Northam Pithara Road. **Type:** Assessment of hollows identified as potential black cockatoo breeding hollows in the Ecoscape (2020 biological survey. **Timing:** Fieldwork conducted on 31 December 2020 **Survey Results Shapefile TRIM Ref:** N/A **Document TRIM Ref:** D21#522599
Ecoscape (2020) Northam Pithara Road Bridges 0753 and 0754 Replacement Biological Survey	**Survey Area:** The Survey area comprised approximately 25.43 ha adjacent to Northam Pithara Road between the towns of Northam and Pithara (SLK 4.25 to 5.75). The survey area was 1.5 km long and approximately 300 m at the widest point. **Type:** Biological assessment to delineate key flora, fauna, soil and surface water values of the proposed works area. The survey identified and mapped the dominant vegetation units and fauna habitat types, assessed vegetation condition and completed searches for conservation significant ecological communities and flora and fauna taxa. **Timing:** The field survey was conducted on 11 November 2020 **Survey Results Shapefile TRIM Ref:** D22#449036 **Document TRIM Ref:** D22#305965

3 SURVEY RESULTS

In accordance with CPS 818 condition 8 (e) (iii), a copy of the relevant sections of the executive summary and report conclusions from the biological survey and/or field assessments are provided in Appendix 1.

3.1 Summary and Analysis of Flora and Vegetation Surveys

A 25.43 ha area on Northam Pithara Road was surveyed by Ecoscape (2020) encompassing Bridges 0753 and 0754, the existing alignment and the proposed realignment location of Northam Pithara Road. The survey mapped two vegetation associations, both of which occur within the Clearing Area:

- **CoErMrOF**: *Casuarina obesa, Eucalyptus rudis* subsp. *rudis* and *Melaleuca rhaphiophylla* mid open forest in riparian areas.
- **ElHpOF**: *Eucalyptus loxophleba* subsp. *loxophleba* and *Hakea preissii* mid open forest on valley floors.

The remainder of the survey area was mapped as cleared road or rail and cleared farmland and road verge with isolated trees and shrubs.

Based on the Ecoscape (2020) vegetation mapping, the extent of the Clearing Area is 1.394 ha and comprises approximately:

- 0.001 ha of CoErMrOF
- 1.159 ha of ElHpOF
- 0.234 ha of isolated trees and shrubs within the mapped cleared area.

The condition rating of the 1.394 ha of proposed clearing comprises:

- 0.108 ha in Degraded Condition
- 1.052 ha in Completely Degraded Condition
- 0.234 ha mapped as N/A

Ecoscape (2020) recorded 70 vascular flora taxa from 53 genera and 24 families from seven floristic quadrats, opportunistic observations and searches for conservation-listed flora. No conservation-listed flora were recorded during the field survey and none are considered likely to occur based on available habitat. There were 40 introduced species recorded, including one Declared Pest plant (**Echium plantagineum*) that has no management requirements in relation to its presence.

Vegetation type ElHpOF had potential to be representative of the Wheatbelt Woodlands TEC (meeting several descriptive criteria), however, does not meet condition thresholds to be representative of the TEC or PEC. A small patch of vegetation type CoErMrOF, where *Eucalyptus rudis* subsp. *rudis* is more dominant, also had potential to be representative, however, did not meet the condition or extent thresholds to be included.

3.2 Summary and Analysis of Fauna Surveys

The Ecoscape (2020) fauna survey identified one fauna habitat type (excluding cleared areas):

- Eucalypt or Sheoak/Eucalypt Woodland comprised of CoErMrOF and ElHpOF – Riparian woodland that includes the Mortlock River North that has seasonal flows and pools, road verge vegetation and fenceline vegetation on farmland.

The Clearing Area comprises 1.160 ha of Eucalypt or Sheoak/Eucalypt Woodland and 0.234 ha of isolated trees and shrubs within the mapped cleared areas.

Ecoscape (2020) recorded 31 terrestrial vertebrate species within the survey area, consisting of three mammals, 27 birds and one reptile. Of these, 29 were native species and two were introduced. No conservation-listed or otherwise significant fauna species were recorded during the field survey.

A post-survey likelihood of occurrence assessment concluded three species are considered by Ecoscape (2020) as Highly Likely to occur within the survey area based on suitable habitat:

- **Chuditch** (*Dasyurus geoffroii fortis*), listed as Vulnerable under the EPBC Act and BC Act.
    - Highly Likely to occur in the survey area as an occasional visitor during traverses including dispersal of young.
- **Carnaby's Cockatoo** (*Calyptorhynchus latirostris*), listed as Endangered under the EPBC Act and BC Act
    - Highly Likely to occur in the survey area for occasional foraging.

- **Peregrine Falcon** (*Falco peregrinus*), listed as Specially Protected - Other Specially Protected under the BC Act
    - Highly Likely to occur in the survey area as an occasional visitor and not dependent on the habitat within the survey area.

Further assessment of likelihood of occurrence of the above species within the Clearing Area has been presented in section 5 (a) (Principle (b)).

The Ecoscape (2020) survey area contained 48 trees of suitable diameter at breast height (DBH) for Threatened black cockatoos consisting of 34 York Gum, 12 Flooded Gums, one planted Sugar Gum and one dead tree. The black cockatoo hollow assessment undertaken by Kirkby (2020) determined that none of the trees contain suitable hollows for use by black cockatoos. One unsuitable hollow had signs of use that Kirkby (2020) noted may have come from a Kookaburra (*Dacelo novaeguineae)*.

The Woodland habitat was considered by Ecoscape (2020) to represent medium-poor quality foraging habitat due to the lack of preferred foraging species, although Eucalypt trees are considered as foraging species. No signs of foraging were recorded during the survey. The Woodland habitat was considered by Ecoscape (2020) as unlikely to be used as night roosts due to the lack of permanent fresh water, although it may be used for day-time roosting during foraging resting periods.

The main significance of the survey area is its role in landscape connectivity as part of a vegetated corridor (largely vegetation type CoErMrOF) that extends along the Mortlock River North, both north and south of the survey area. This riparian corridor may be used by fauna species and habitat and for dispersal.

3.3 Summary and Analysis of Dieback Survey

A Phytophthora Dieback assessment was conducted encompassing 25.44 hectares on Northam Pithara Road between SLK 4.70 and SLK 5.70 by Glevan Consulting (2021). No Phytophthora Dieback infestations were observed during the assessment. The entire survey area was excluded from the assessment due to being degraded or devoid of vegetation.

No soil and tissue samples were taken during the assessment. A desktop assessment of previous Phytophthora spp. recoveries for the area indicates that Phytophthora has not previously been recovered within, or near the survey area.

4 DESKTOP ASSESSMENT OF VEGETATION

4.1 Desktop Vegetation Description

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

For a full description of the existing vegetation, refer to the Biological Report found at D22#305965.

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

Vegetation Type	Extent within Native Vegetation Clearing Area (ha)	Total Extent Mapped (ha) within Survey Area
ElHpOF; *Eucalyptus loxophleba* subsp. *loxophleba* and *Hakea preissii* mid open forest (valley habitat).	1.159 ha	4.17 ha
CoErMrOF: *Casuarina obesa, Eucalyptus rudis* subsp. *rudis* and *Melaleuca rhaphiophylla* mid open forest in riparian areas	0.001 ha	3.61 ha
Isolated trees and shrubs of unknown spp. on cleared pasture.	0.234 ha	N/A

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. 352 - Medium woodland; York gum.	**Statewide**	1724,268	142,012	19.61	8.92
	IBRA Bioregion Avon Wheatbelt	63,0577	108,887	17.27	9.36
	IBRA Sub-region AVW2	337,871	36,295	10.74	2.13
	Local Government Authority Shire of Northam	66,825	7,623	11.41	3.98

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 at variance, or 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 at variance to this Principle.

Vegetation

The proposed clearing will result in the removal of up to 1.394 ha of native vegetation in the new alignment for Northam Pithara Road. The sections within the Clearing Area are long and linear, with 1.309 ha occurring as roadside vegetation and 0.085 ha occurring alongside a railway line. The Clearing Area comprises two vegetation types that are considered typical of the local area:

- ElHpOF; *Eucalyptus loxophleba* subsp. *loxophleba* and *Hakea preissii* mid open forest (valley habitat) in a Degraded (9.7%) to Completely Degraded (90.3%) condition.
- CoErMrOF; *Casuarina obesa, Eucalyptus rudis* subsp. *rudis* and *Melaleuca rhaphiophylla* mid open forest (riparian habitat) in Degraded (100%) condition.

The vegetation is in a Degraded to Completely Degraded condition due to agricultural disturbance and edge effects on road and rail reserves. These disturbances have led to low native species diversity and density in the lower stratum and likely in the mid stratum, although long-lived perennial tree species remain with significant weed cover (Ecoscape, 2020).

As outlined in Table 4, Beard Vegetation Association 352 (Medium woodland; York gum) has been mapped over the Clearing Area (DPIRD-006). Approximately 19.61% of the pre-European extent of Vegetation Association 352 remains, with 8.92% of the current extent in DBCA managed land. Although Vegetation Association 352 has less than the 30% Statewide guidelines value, vegetation within the Clearing Area is unlikely to be significant as a remnant, given the Degraded to Completely Degraded condition of the vegetation, insignificant patch sizes (equal to or less than 10 ha each), the distance to nearby Threatened and Priority flora and fauna records, lack of landscape connectivity and the presence of much larger, significant remnants in the local environment.

Threatened Ecological Communities

Due to composition or condition, the vegetation type described by Ecoscape (2020) within the Clearing Area is not representative of communities that correspond to any state (BC Act), or Commonwealth (EPBC Act) listed Threatened Ecological Community (TEC), or any Priority Ecological Community (PEC) listed by DBCA.

Flora

Database searches by Ecoscape (2020) indicate that 24 Threatened and 32 Priority flora species have been recorded or where associated habitat may/is likely to occur within 20 km of the survey area. Four conservation-listed flora species were considered to have a Possible likelihood of occurrence prior to the field survey.

A field survey undertaken in November 2020 (Ecoscape, 2020) identified 68 vascular flora species within the survey area. Of these, 40 species were introduced (59% of the total flora species identified), including Patterson's Curse (**Echium plantagineum*), which is listed as a Declared Pest.

None of the flora species identified were Threatened or Priority species or of other significance. Furthermore, the post-survey likelihood of occurrence assessment considered that all conservation significant species were considered Highly Unlikely to occur within the Clearing Area, based on the absence of suitable habitat (Ecoscape, 2020).

Fauna

Thirty-one common vertebrate fauna species were recorded during the survey, consisting of three mammals (including one introduced species; European Cattle), 27 birds (including one introduced species; Laughing Kookaburra) and one reptile. No conservation-listed or otherwise significant fauna species were recorded during the field survey, although Ecoscape's post survey Likelihood of Occurrence assessment determined that three conservation significant vertebrate fauna species had a High likelihood of occurring – Chuditch (VU), Carnaby's Cockatoo (EN) and Peregrine Falcon (OS).

One fauna habitat type, woodland habitat, was identified in the survey area. This habitat type was observed to be widespread in the survey study area and beyond, however it occupies only a small proportion of the landscape. The habitat was noted to be poor quality, owing to its low plant species diversity and therefore limited foraging potential for fauna. The habitat does not support a diverse assemblage of fauna, only being utilised by generalist species that specifically forage on the few food sources present, and those that prey upon them. Whilst the woodland habitat type provides some shelter for species during dispersal, Ecoscape (2020) noted that this was primarily the riparian part of the habitat which forms a connected corridor along the Mortlock River. This riparian corridor habitat is not present within the Clearing Area. The woodland habitat within the Clearing Area consists of narrow strips that do not provide any connectivity for fauna movement across the landscape.

The significance of fauna habitat within the Clearing Area is discussed further in Principle (b).

The native vegetation proposed to be cleared consists of narrow, linear strips dominated by introduced flora species in a highly modified agricultural environment. The Clearing Area is not considered to comprise a high level of flora or fauna species biological diversity, with limited landscape connectivity and no conservation significant species or ecological communities likely to be significantly impacted.

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

Methodology

- DCCEEW (2023)
- Ecoscape (2020)
- Government of Western Australia (2019)
- Government GIS Shapefiles:
  - Pre-European Vegetation (DPIRD-006) (Accessed 16/10/2024)
  - Native Vegetation Extent (DPIRD-005) (Accessed 16/10/2024)
  - DBCA Restricted Threatened and Priority Ecological Communities (Accessed 16/10/2024)
  - DBCA Restricted Threatened and Priority Flora (Accessed 15/10/2024)
  - DBCA Restricted Threatened and Priority Fauna (Accessed 15/10/2024)
  - Ecological Linkages (Accessed 16/10/2024)
- Natural Resource Management SLIP Soil Systems (Accessed 24/01/2024)

(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.

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

Based on the Ecoscape (2020) fauna habitat assessment and subsequent Main Roads desktop review and site inspection, 1.160 ha of Eucalypt or Sheoak/Eucalypt Woodland fauna habitat type occurs within the Clearing Area, comprised of 0.001 ha riparian (CoErMrOF) and 1.159 ha valley (ElHpOF) habitat vegetation types.

This fauna habitat type was collectively described as riparian woodland that includes the Mortlock River North that has seasonal flows and pools, road verge vegetation and fence line vegetation on farmland. This vegetation is in a Degraded to Completely Degraded condition throughout the survey area due to agricultural disturbance and edge effects on road and rail reserves. The habitat was observed to be widespread in the study area and beyond. The adjacent (context) and wider area is also grazed and in similar condition with few shrubs and disturbed soils.

The habitat quality is poor due to low plant species diversity and therefore represents limited foraging. It is only utilised by generalist species or those that specifically forage on the few food sources present, and those that prey upon them. The woodland habitat does, however, provide shelter during dispersal although this is mainly the riparian part of the habitat that forms a connected corridor along the Mortlock River, which is not within the Clearing Area

Ecoscape's post survey Likelihood of Occurrence assessment determined that the Woodland habitat may be marginally suitable for the three conservation-listed species identified as having a high likelihood of occurring:

Carnaby's Cockatoo

The Clearing Area is within the boundary of the EPA (2019) estimated distribution areas for the Carnaby's Cockatoo. Forty-eight trees of suitable diameter at breast height to be potential nesting trees were recorded by Ecoscape (2020) in the wider survey area, although the trees contained no suitable hollows (Kirkby, 2020).

While up to 11 DBH trees *(E. loxophleba)* will be impacted by the proposed clearing, it is not considered that their removal will impact on the available breeding/roosting habitat for this species for the reasons outlined below.

According to Groom (2011), York Gum (*E. loxophleba*) is used by Carnaby's Cockatoo for roosting and feeding, and Flooded Gum (*E. rudis*) is used for roosting; however, both species are categorised as "Low" priority, indicating that these species do not constitute significant habitat for Carnaby's Cockatoo.

According to Dawson (pers com., September 2024), Carnaby's Cockatoos preferentially breed in Wandoo. Rick Dawson (2024) is aware of one record of a York Gum containing a breeding hollow, which occurs in Kalbarri over 550 km from the Clearing Area, and for York Gums to form suitable hollows, they need to reach approximately 800 mm DBH or greater (Dawson, 2024). Based on this advice, York Gums are unlikely to form suitable nesting hollows to be utilised by Carnaby's Cockatoo and they are not significant as a nesting tree species for Carnaby's Cockatoo.

Ecoscape (2020) advised that:

- the Woodland habitat was considered to represent medium-poor quality foraging habitat due to the lack of preferred foraging species, although Eucalypt trees are considered as foraging species, and
- the Woodland habitat is unlikely to be used as night roosts due to the lack of permanent fresh water, although it may be used for day-time roosting during foraging resting periods.

Of the 1.160 of *E. loxophleba* woodland within the Clearing Area, 1.053 ha (90.7%) is in a Completely Degraded Condition (Ecoscape, 2020).

1.160 ha of low-quality foraging habitat and 11 DBH trees are proposed to be cleared. An assessment of the potential proposed clearing impacts is provided below:

- Breeding, nesting or night roosting habitat:
    - The nearest confirmed Carnaby's breeding site is approximately 14.1 km west of the Clearing Area.
    - The nearest confirmed night roosting site is over 20 km from the Clearing Area.
    - No unconfirmed roosting or breeding sites are within 20 km of the Clearing Area.
    - No known nesting or night roosting trees to be cleared for this Proposal.
    - No suitable nesting trees to be cleared for this Proposal.
    - No preferred tree species for nesting occur within the Clearing Area. Potential nesting tree species occurring within the Clearing Area are unlikely to form suitable hollows, based on advice from Dawson (2024).
    - No clearing or degradation of any part of a vegetation community known to contain breeding habitat will be cleared for this Proposal.
    - The distance to confirmed breeding and night roosting sites reduces the likelihood that vegetation within and surrounding the Clearing Area will be utilised.

- Loss of foraging habitat:
    - Foraging habitat was classified as medium to poor quality by Ecoscape (2020), with vegetation in a Degraded to Completely Degraded condition.
    - Given the lack of preferred species, the low priority of *E. loxophleba* and *E. rudis* for Carnaby's Cockatoos and the Degraded to Completely Degraded condition, vegetation within the Clearing Area provides poor foraging value.
    - Up to 1.160 ha of native vegetation providing poor foraging value will be removed for this Proposal.
    - Foraging habitat is not within close proximity to breeding sites or night roosting habitat, having no suitable hollows within the wider survey area and being 14.1km from the nearest breeding site and over 20 km from the nearest night roosting site. Given the distance to confirmed breeding and night roosting sites, the significance of any potential foraging habitat is reduced.

Given the above, the clearing of up to 1.160 ha of medium-poor quality Black Cockatoo foraging habitat (*E. loxophelba* woodland) in a Degraded to Completely Degraded condition does not represent significant habitat for Carnaby's Cockatoo.

Chuditch

Wheatbelt Natural Resource Management Inc (n.d.) advise that Chuditch are now only found in the jarrah forests of the south-west of Western Australia, a few small populations in the eastern Goldfields and in large wheatbelt reserves. Chuditch are usually nocturnal but will occasionally hunt during the day when feeding young or when the nights are cold. Chuditch occur at low densities and have home ranges of between 55 and 400 hectares. According to the DBCA GIS layer, the closest Chuditch record (dead) was 5.7 km southwest of the Clearing Area in 2008.

The Native Vegetation Extent layer shows no remnant patches providing connectivity between nearby Chuditch records and the Clearing Area. Although the Woodland habitat in the Clearing Area may provide foraging habitat, larger areas of nearby vegetation that are in equal or better condition located further away from the proposed alignment are likely to be preferred, including:

- 725 ha of York gum woodland and Jarrah, marri and wandoo woodland occurring 5.7 km southwest of the Clearing Area.
- 856 ha of York gum woodland occurring 13 km southwest of the Clearing Area.
- 1124 ha of York gum woodland and Jarrah, marri and wandoo woodland occurring 15.8 km southeast of the Clearing Area.

Chuditch may be present on occasion, as they may utilise the adjacent riparian area during traverses including dispersal of young; however, they are unlikely to be dependent on the Woodland habitat available within the Clearing Area.

Peregrine Falcon

BirdLife Australia (2017) advise that Peregrine Falcon is found in most habitats, from rainforests to the arid zone, and at most altitudes, from the coast to alpine areas. It requires abundant prey and secure nest sites and prefers coastal and inland cliffs or open woodlands near water and may even be found nesting on high city buildings. According to the DBCA GIS layer, the closest Peregrine Falcon record was over 6 km northeast of the Clearing Area. The Peregrine Falcon is an aerial species and likely to only overfly the area given the absence of specific habitat features in the Clearing Area. Given the lack of preferred habitat of rocky cliffs or significant rocky outcrops, Peregrine falcon is likely to be only an occasional visitor and not dependent on the habitat within the Clearing Area.

Given the Degraded to Completely Degraded condition, the low species diversity, low foraging value and the presence of nearby significant remnants of native vegetation, the small quantity of woodland habitat vegetation (1.160 ha) proposed to be cleared is not likely to comprise the whole or a part of, or necessary for the maintenance of, a significant habitat for fauna.

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

Methodology

- BirdLife Australia (2017)
- DCCEEW (2023)
- Ecoscape (2020)
- EPA (2019)
- Groom (2011)
- Wheatbelt Natural Resource Management Inc (n.d.)
- Kirkby (2020)
- Government GIS Shapefiles:
  - DBCA Restricted Threatened and Priority Fauna (Accessed 15/10/2024)
  - DBCA Carnaby's Cockatoo Confirmed Roost Sites (DBCA-050) (Accessed 15/10/2024)
  - DBCA Carnaby's Cockatoo Unconfirmed Roost Sites (DBCA-051) (Accessed 15/10/2024)
  - DBCA Carnaby's Cockatoo Confirmed Breeding Areas within the Swan Coastal Plain and Jarrah Forest IBRA Regions (DBCA-054) (Accessed 15/10/2024)
  - DBCA Carnaby's Cockatoo Unconfirmed Breeding Areas within the Swan Coastal Plain and Jarrah Forest IBRA Regions (DBCA-055) (Accessed 15/10/2024)
  - ENVN DBCA Restricted White Tailed Black Cockatoo Breeding Site locations (Accessed 15/10/2024)
  - Native vegetation Extent (DPIRD-005) (Accessed 15/10/2024)

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

Proposed clearing is not at variance to this Principle.

A desktop likelihood of occurrence assessment undertaken by Ecoscape (2020) identified one Threatened flora species; *Frankenia conferta*, with a Possible likelihood of occurring in the survey area.

Frankenia conferta (T), is known to occur in dry brown / grey loam or sand. It has been recorded adjacent to seasonally inundated waterbodies (fresh or salt water). This species was not recorded by Ecoscape (2020) during the field survey and in its post-survey likelihood of occurrence assessment Ecoscape considered the species Highly Unlikely to occur in the survey area given the lack of suitable habitat and intensive grazing.

No Threatened flora species were recorded during the field survey and the post survey likelihood of occurrence assessment concluded all Threatened flora species are Highly Unlikely to occur within the survey area (including the Clearing Area) due to the lack of suitable habitat and intensive grazing (Ecoscape, 2020).

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

Methodology

- Ecoscape (2020)
- Government GIS shapefiles:
  - DBCA Restricted Threatened and Priority Flora (Accessed 15/10/2024)
  - WA Restricted Herbarium Flora (Accessed 15/10/2024)

(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.

According to the DBCA GIS layer, one Threatened Ecological Community (TEC), the Eucalypt Woodlands of the Western Australian Wheatbelt, is mapped over the Clearing Area.

The field survey undertaken by Ecoscape (2020) identified that, while meeting the descriptive criteria of being a Eucalypt woodland dominated by a listed species (*Eucalyptus loxophleba* subsp. *loxophleba*), none of the vegetation met the condition threshold to be considered as representative of the TEC as, in all cases within the survey area and context area, the vegetation was in Degraded to Completely Degraded condition and patch sizes were small due to the fragmented character of the vegetation within the landscape. Therefore, the vegetation within the survey area (including the Clearing Area) and context area is not representative of the Wheatbelt Woodlands TEC.

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

Methodology

- Ecoscape 2020)
- Government GIS shapefiles:
  - DBCA Restricted Threatened and Priority Ecological Communities (Accessed 15/10/2024)

(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 likely to be at variance to this Principle.

The Clearing Area occurs within a highly fragmented agricultural landscape, intersecting three patches of 2 ha, 8 ha and 10 ha of Beard Vegetation Association 352 (VA 352) that have limited connectivity to other patches of remnant vegetation but are associated with the Mortlock River.

Significant contiguous (or contiguous within a larger patch of native vegetation) remnants of VA 352 within the surrounding area include:

- 856 ha of VA 352 occurring 13 km southwest of the Clearing Area containing an ESA associated with a Threatened flora record.
- North of the aforementioned patch and separated only by a local road is 110 ha of VA 352 associated with a minor watercourse. This patch contains an ESA and several sub populations of a Threatened flora species and provides connectivity to other patches containing Threatened flora.
- 491 ha of VA 352 occurring 15.8 km to the southeast of the Clearing Area within a 1,124 ha patch of native vegetation. This patch is associated with the Mortlock River East branch, intersects multiple records of Peregrine Falcon (OS) and provides landscape connectivity to nearby remnant vegetation, including the 41 ha Mortlock River Nature Reserve.
- 235 ha of VA 352 occurring 5.7 km to the southwest within a 721 ha patch of native vegetation, which contains several records of Threatened and Specially Protected fauna.
- 103 ha of VA 352, 11.7 km to the west within a 188 ha patch of native vegetation. This patch is associated with a watercourse and provides landscape connectivity to nearby, larger patches of vegetation. The furthest point of this patch from the Clearing Area is approximately 1.6 km east of a confirmed Carnaby's breeding site.

Although not contiguous, a notable area of remnant vegetation occurs 11.5 km east of the Clearing Area, where a GIS search over 2 km width by 5 km length area along the Avon River returned 30 disjointed patches comprising 153 ha of VA 352 and 95 recent (within the past 20 years) records of Threatened, Specially Protected and Priority fauna species.

Given the extent and context of these remnants, being either,

1. contiguous patches larger than 100 ha and occurring in association with a minor river or a main stream, containing ESA's and records of Threatened or Priority species or providing landscape connectivity to nearby remnants; or,
2. disjointed but closely spaced patches comprising over 150 ha of VA 352 and occurring in association with a main stream and a large quantity of conservation significant fauna records, vegetation in these patches is likely to be in better condition, provide more extensive and higher quality habitat and corridors for fauna to traverse in comparison to the small, narrow and isolated patches in the Clearing Area

Although VA 352 has less than the 30% of its pre-European extent remaining (see Table 4), vegetation within the Clearing Area is unlikely to be significant as a remnant, given the Degraded to Completely Degraded condition of the vegetation, insignificant patch sizes (equal to or less than 10 ha each), the distance to nearby Threatened and Priority flora and fauna records, the lack of landscape connectivity and the presence of much larger, significant remnants in the local environment as outlined above.

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

Methodology

- Aerial photography
- Government GIS shapefiles:
  - Pre-European Vegetation (DPIRD-006) (Accessed 16/10/2024)
  - Native Vegetation Extent (DPIRD-005) (Accessed 16/10/2024)
  - DBCA Restricted Threatened and Priority Flora (Accessed 15/10/2024)
  - DBCA Restricted WA Herbarium Flora (Accessed 15/10/2024)
  - DBCA Restricted Threatened and Priority Fauna (Accessed 15/10/2024)
  - DBCA Carnaby's Cockatoo Confirmed Roost Sites (DBCA-050) (Accessed 15/10/2024)
  - DBCA Carnaby's Cockatoo Confirmed Breeding Areas within the Swan Coastal Plain and Jarrah Forest IBRA Regions (DBCA-054) (Accessed 15/10/2024)
  - Environmentally Sensitive Areas (DWER-046) (Accessed 15/10/2024)
- Government of Western Australia (2019)

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

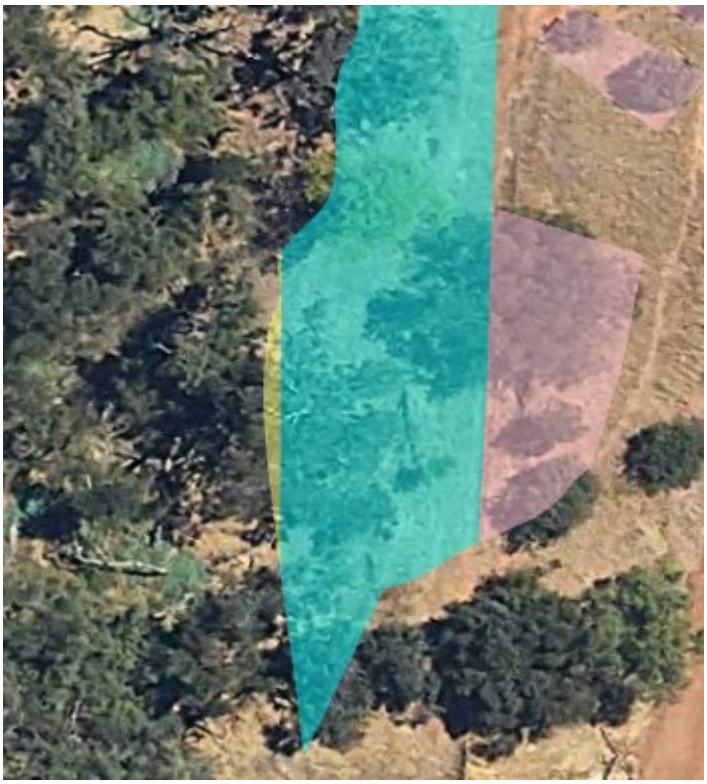
Proposed clearing is not likely to be at variance to this Principle.

The proposed Clearing Area is within a surface water area (Avon River System) proclaimed under the RIWI Act. No wetlands or watercourses have been recorded intersecting the Clearing Area; however, the Mortlock River and the Mullabine Creek occur approximately 64 m west and 68 m south, respectively, from the proposed clearing.

Ecoscape (2020) recorded one riparian vegetation habitat type within the Survey Area; CoErMrOF. This vegetation grows in association with the Mortlock River and comprises 0.001 ha (ten square metres) of the Clearing Area, according to vegetation mapping undertaken by Ecoscape (2020).

In Australia, the main channel of a waterway can typically be determined by water levels that occur once every seven to ten years (DoW, 2000). Waterways mapping for Bridge 753A and 754A (Cardno, 2021) shows that vegetation within the Clearing Area occurs above the 1-in-50-year flood level (determined to be the 154 m and 155 m contour levels, respectively).

The vegetation mapping undertaken by Ecoscape (2020) was broadscale and therefore contained inaccuracies. The small area in yellow in the image below represents CoErMrOF mapped within the Clearing Area. Given that CoErMrOF within the Clearing Area overlaps the canopy of trees that are primarily covered by ElHpOF (blue) and the vegetation is situated well above the contour level of the watercourse, it is likely to be ElHpOF that has been inaccurately mapped as CoErMrOF.



As it is unlikely that native vegetation growing in, or in association with a wetland or watercourse will be impacted, the proposed clearing is not likely to be at variance to this Principle.

Methodology

- Cardno (2021)
- DoW (2000)
- Ecoscape (2020)
- Government GIS shapefiles:
  - Ramsar Wetlands (DBCA-010) (Accessed 15/10/2024)
  - Directory of Important Wetlands in Australia – Western Australia (DBCA-045) (Accessed 15/10/2024)
  - Hydrography Linear (Hierarchy) (DWER-031) (Accessed 15/10/2024)
  - RIWI Act, Rivers (DWER-036) (Accessed 15/10/2024)

(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 proposed Clearing Area is separated into two sections for levels of desktop risk for land degradation, as described further below:

Southernmost section of clearing:

- Salinity Risk – <3% of map unit has a moderate to high salinity risk or is presently saline.
- Water Erosion – 3-10% of map unit has a high to extreme water erosion risk.
- Waterlogging – <3% of map unit has a moderate to very high waterlogging risk.
- Wind erosion – 3-10% of map unit has a high to extreme wind erosion risk.
- Land Instability – <3% of map unit has a moderate to high hazard.
- Flood – <3% of map unit has a moderate to high flood risk.

Central & Northern section:

- Salinity – 10-30% of map unit has a moderate to high salinity risk or is presently saline.
- Water erosion – 3-10% of map unit has a high to extreme water erosion risk.
- Waterlogging – >70% of map unit has a high water repellence risk.
- Wind erosion – 10-30% of map unit has a high to extreme wind erosion risk.
- Land instability – <3% of map unit has a moderate to high hazard.
- Flood – >70% of map unit has a moderate to high flood risk.

The proposed clearing is 1.394 ha in three separate sections of Degraded to Completely Degraded vegetation that has been subject to a long history of disturbance associated with adjacent agricultural practices. The clearing will be undertaken over a short period (<6 months), with cleared areas subsequently being sealed or covered by non-dispersive materials. Works associated with this Proposal have been designed to avoid disturbance or interruption of any natural drainage and surface run-off patterns.

Acid sulphate soils have a Low Probability (Very Low Confidence) of occurring in the Clearing Area.

Based on the above desktop risk levels for the Clearing Area, and noting the small quantity of clearing and Degraded to Completely Degraded condition of native vegetation present, the proposed clearing is unlikely to cause appreciable land degradation.

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

Methodology

- Government GIS Shapefiles:
  - CSIRO Acid Sulfate Soils (Accessed 24/01/2024)
  - Soil landscape land quality – Water Erosion Risk (DPIRD-013) (Accessed 24/01/2024)
  - Soil landscape land quality – Wind Erosion Risk (DPIRD-016) (Accessed 24/01/2024)
  - Soil landscape land quality – Salinity Risk (DPIRD-009) (Accessed 24/01/2024)
  - Soil landscape land quality – Surface Acidity (DPIRD-035) (Accessed 24/01/2024)
  - Soil landscape land quality – Waterlogging Risk (DPIRD-035) (Accessed 24/01/2024)
  - Soil landscape land quality – Flood Risk (DPIRD-007) (Accessed 24/01/2024)

(h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.

Proposed clearing is not at variance to this Principle.

A search of ArcGIS shapefiles indicates that no conservation areas are located in or near the Clearing Area.

The nearest DBCA managed conservation area is Cartamulligan Well Nature Reserve, approximately 13 km north of the Clearing Area. The nearest Environmentally Sensitive Area (ESA), as declared under the EP Act, is approximately 9 km to the southwest. No linkages connect the Clearing Area to any conservation reserves or ESAs.

Given the distance from the Clearing Area and the lack of ecological linkages to the reserve and ESA, the conservation areas will not be impact by proposed activities.

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

Methodology

- Government GIS Shapefiles:
  - DBCA Legislated Lands and Waters (DBCA-011) & Lands of Interest (DBCA-012) (Accessed 15/10/2024)
  - Environmentally Sensitive Areas (DWER-046) (Accessed 15/10/2024)
  - Offsets Register – Offsets (DWER-078) (Accessed 15/10/2024)
  - Ramsar Wetlands (DBCA-010) (Accessed 15/10/2024)
  - Directory of Important Wetlands in Australia – Western Australia (DBCA-045) (Accessed 15/10/2024)

(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 Clearing Area is not within, or adjacent to, a Public Drinking Water Source Area, Groundwater Area, or CAWS Catchment Area. The Clearing Area is within a surface water area (Avon River System) proclaimed under the RIWI Act.

Works associated with the proposed clearing have been designed to avoid disturbance or interruption of any natural drainage and surface run-off patterns, which has been confirmed using a search of ArcGIS shapefiles.

No watercourses or wetlands occur within the Clearing Area. The Mortlock River and Mullabine Creek occur within 100 m of the Clearing Area. Vegetation proposed to be cleared occurs above the 1-in-50-year flood event and clearing is therefore unlikely to cause deterioration of surface water quality or erosion of the banks of these watercourses.

In the southernmost section of the Clearing Area, 3-10% of map unit has a high to extreme water erosion risk and 3-10% of map unit has a high to extreme wind erosion risk. <3% of map unit has a moderate to high salinity risk or is presently saline.

In the central and northern sections of the Clearing Area, 3-10% of map unit has a high to extreme water erosion risk and 10-30% of map unit has a high to extreme wind erosion risk. 10-30% of map unit has a moderate to high salinity risk or is presently saline.

The proposed clearing is 1.394 ha of Degraded to Completely Degraded remnants in narrow, linear rail and roadside sections. The clearing will be undertaken over a short period (<6 months), with cleared areas subsequently being sealed or covered by non-dispersive materials.

The minor scale and linear nature of clearing at each bridge site is unlikely to result in a significant increase to salinity or excessive levels of surface runoff that adversely alter surface or underground water quality.

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

Methodology

- Government GIS Shapefiles:
  - Public Drinking Water Source Areas (DWER-033) (Accessed 24/01/2024)
  - RIWI Act, Surface Water Areas and Irrigation Districts (DWER-037) (Accessed 24/01/2024)
  - CAWSA Part 2A Clearing Control Catchments (DWER-004) (Accessed 24/01/2024)
  - RIWI Act, Groundwater Areas (DWER-034) (Accessed 24/01/2024)
  - Soil landscape land quality - Salinity Risk (DPIRD-009) (Accessed 24/01/2024)
  - Groundwater Salinity Statewide (DWER-026) (Accessed 24/01/2024)
  - Soil Landscape Mapping – Systems (DPIRD-064) (Accessed 24/01/2024)
  - CSIRO Acid Sulfate Soils (Accessed 24/01/2024)
  - Soil landscape land quality - Subsurface Acidification Risk (DPIRD-011) (Accessed 24/01/2024)

(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.

No watercourses or wetlands intersect the Clearing Area. The Mortlock River and the Mullabine Creek occur approximately 64 m west and 68 m south, respectively, from the proposed clearing. All sections of proposed clearing occur above the 1-in-50-year flood level (determined to be the 154 m and 155 m contour levels, respectively) (Cardno, 2021).

The local region has a mean annual rainfall of 425 mm (BoM, 2024). In the southern section of the Clearing Area, the gravels and sandy duplexes of the Jelcobine System have low water retention, with only 3% of the map unit having a moderate to high flood risk. The terrain is described as isolated steep low hills with undulating low granite hills and isolated lateritic remnants in the Zone of Rejuvenated Drainage.

The central and northern sections are within the Avon Flats System; alluvial flats with brown loamy earth, grey non-cracking clay and brown deep sand that are likely to have high water retention. Over 70% of the map unit has a moderate to high flood risk.

The narrow, linear clearing of 1.394 ha of Degraded to Completely Degraded condition vegetation is unlikely to cause or exacerbate the incidence or intensity of flooding.

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

Methodology

- BoM (2024)
- Cardno (2021)
- Government GIS Shapefiles:
  - Soil Landscape Mapping – Systems (DPIRD-064) (Accessed 24/01/2024)
  - 2 m Contours (DPIRD-072) (Accessed 24/01/2024)
  - Soil landscape land quality - Waterlogging Risk (DPIRD-015) (Accessed 24/01/2024)
  - Soil landscape land quality - Flood Risk (DPIRD-007) (Accessed 24/01/2024)

6 VEGETATION MANAGEMENT

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

7 REHABILITATION, REVEGETATION AND OFFSETS

7.1 Revegetation and Rehabilitation

No temporary clearing will be undertaken as part of the Proposal activities and therefore no revegetation or rehabilitation will be conducted under CPS 818.

7.2 Offset Proposal

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

8 STAKEHOLDER CONSULTATION

Main Roads will undertake stakeholder consultation in accordance with CPS 818 Condition 8.

9 COMPLIANCE WITH CPS 818

Table 5 summarises what further pre-clearing impact assessment 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.	**No**	No further action required.
2. Clearing is at variance or may be at variance with Clearing Principle (g) land degradation, (i) surface or underground water quality **or** (j) the incidence of flooding.	**No**	No further action required.
3. Clearing is at variance with Clearing Principle (g) land degradation, (i) surface or underground water quality **and** (j) the incidence of flooding.	**No**	No further action required.
4. The Proposal involves clearing for temporary works (as defined by CPS 818).	**No**	No further action required.

Impact of Clearing	Yes/No or NA	Further Action Required
5a. Proposal is within a Region that: • 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 Annexure 204B (TABLE 204B.9.1), Hygiene Checklists *(D17#859669)* and Vehicle, Plant and Machinery Hygiene Register Template *(D23#179551)* will be applied
5b. Do the proposed works require clearing within or adjacent to DBCA managed lands in non-dry conditions?	**No**	No further action required.
6. Main Roads has been notified by DWER or an environmental specialist that the area to be cleared is susceptible to a pathogen other than dieback.	**No**	No further action required.
7. Weeds are likely to spread to and result in environmental harm to adjacent areas of native vegetation that are in good or better condition.	**No**	No further action required.

Impact of Clearing	Yes/No or NA	Further Action Required
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 and any other associated documentation including the VMP, Dieback Management Plan or Offset Proposal was suitably qualified and had more than three years' experience.

10 REFERENCES

Birdlife Australia (2017) *Peregrine Falcon*. Available online from https://birdlife.org.au/bird-profiles/peregrine-falcon/
Accessed 15/10/2024.

Bureau of Meteorology Australia (BoM) (2024) *Climate Averages for Australian Sites – Northam –* Available online from http://www.bom.gov.au/climate/data/index.shtml
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11 APPENDICES

Appendix 1: CPS 818 condition 8 (e) (iii) Biological Surveys and Field Assessment Executive Summary and Report Conclusions

Flora and Vegetation Surveys

Ecoscape (2020) Northam Pithara Road Bridges 0753 and 0754 Replacement Biological Survey

Executive Summary

Main Roads WA (Main Roads) Wheatbelt Region intends to replace the Mortlock River Bridge (Bridge 0753) and Mallabine Creek Bridge (Bridge 0754) on the Northam Pithara Road and is taking the opportunity to realign the road to improve the safety, drainage and load and access capacities of both bridges, and associated railway crossing and road.

Ecoscape was engaged to conduct a biological assessment to delineate key flora, fauna, soil and surface water values of the proposed works area (25.43 ha; the 'survey area'). The assessment incorporated a desktop assessment, Detailed flora and vegetation survey and Basic fauna survey, including identification of Threatened and Priority Flora, Fauna and Ecological Communities.

The key findings of the desktop assessment, conducted using a 20 km buffer around the survey area (the 'study area'), were:

- the survey area is located within a mapped extent of pre-European vegetation association 352 (Department of Primary Industries and Regional Development 2019) that has less than 20% of its original extent remaining at all scales from State-wide to Local Government Area (Department of Biodiversity Conservation and Attractions 2019a)
- three Western Australian Priority Ecological Communities (PECs) are known to occur within the study area, with one (*Eucalypt Woodlands of the Western Australian Wheatbelt*; Priority 3) indicatively mapped as intersecting the survey area; this PEC is incorporated into the Commonwealth Threatened Ecological Community of the same name (Wheatbelt Woodlands TEC)
- no Threatened or Priority-listed flora species have been recorded from within the survey area or context area (i.e. within 500 m of the survey area)
- 21 conservation-listed fauna species have been recorded from within 20 km of the survey area, although none from within it
- Carnaby's Cockatoo is the only species of threatened Black Cockatoo likely to occur within the survey area.

The flora and vegetation field survey and subsequent analysis identified:

- 70 vascular flora species recorded from seven floristic quadrats
- no conservation-listed flora were recorded during the field survey and none are considered likely to occur based on available habitat
- 40 introduced species including one Declared Pest plant (**Echium plantagineum*) that has no management requirements in relation to its presence
- two vegetation types:
    - **CoErMrOF**: *Casuarina obesa*, *Eucalyptus rudis* subsp. *rudis* and *Melaleuca rhaphiophylla* mid open forest in riparian areas

  - **ElHpOF**: *Eucalyptus loxophleba* subsp. *loxophleba* and *Hakea preissii* mid open forest on valley floors
- all native vegetation was entirely in Degraded-Completely Degraded condition.

Vegetation type **ElHpOF** had potential to be representative of the Wheatbelt Woodlands TEC (meeting several descriptive criteria), however, does not meet condition thresholds to be representative of the TEC or PEC. A small patch of vegetation type **CoErMrOF**, where *Eucalyptus rudis* subsp. *rudis* is more dominant, also had potential to be representative, however, did not meet the condition or extent thresholds to be included.

Fauna Surveys

Ecoscape (2020) Northam Pithara Road Bridges 0753 and 0754 Replacement Biological Survey

Main Roads WA (Main Roads) Wheatbelt Region intends to replace the Mortlock River Bridge (Bridge 0753) and Mallabine Creek Bridge (Bridge 0754) on the Northam Pithara Road and is taking the opportunity to realign the road to improve the safety, drainage and load and access capacities of both bridges, and associated railway crossing and road.

Ecoscape was engaged to conduct a biological assessment to delineate key flora, fauna, soil and surface water values of the proposed works area (25.43 ha; the 'survey area'). The assessment incorporated a desktop assessment, Detailed flora and vegetation survey and Basic fauna survey, including identification of Threatened and Priority Flora, Fauna and Ecological Communities.

The fauna survey that incorporated a Black Cockatoo habitat survey, identified:

- two fauna habitat types: Woodland and Cleared (paddock)
- 31 terrestrial vertebrate species recorded within the survey area (four mammals, 26 birds and one reptile)
- no conservation-listed species
- a post likelihood of occurrence assessment found three species have a high likelihood of occurring: Western Quoll (Chuditch) as an occasional visitor during traverses including dispersal of young, Carnaby's Cockatoo (see below) and Peregrine Falcon on occasion although there is no suitable structures for nesting
- two introduced species were recorded: European cattle and Laughing Kookaburra.

The Black Cockatoo habitat assessment identified:

- 48 trees of suitable diameter to be considered as Black Cockatoo habitat trees consisting of 34 York Gum, 12 Flooded Gums, one planted Sugar Gum and one dead tree
- one tree was classified as Class 2, having old evidence of use by Carnaby's Cockatoo and hollows of suitable size and angles for use by Black Cockatoo species
- eight Class 3 trees that have potentially suitable hollows but no evidence of use by Black Cockatoo species
- 23 Class 4 trees and 16 Class 5 trees that do not have suitable hollows but are sufficiently large enough to form them in the future
- two trees were further ranked for their potential value as habitat as they had hollows of the preferred size and orientation; one was the Class 2 tree (a York Gum) and the other a Class 3 tree (Sugar Gum)

- the Woodland habitat was considered to represent medium-poor quality foraging habitat due to the lack of preferred foraging species, although Eucalypt trees are considered as foraging species
- the Woodland habitat is unlikely to be used as night roosts due to the lack of permanent fresh water, although it may be used for day-time roosting during foraging resting periods.

The main significance of the survey area is its role in landscape connectivity as part of a vegetated corridor (largely vegetation type **CoErMrOF**) that extends along the Mortlock River North, both north and south of the survey area. This riparian corridor may be used by fauna species and habitat and for dispersal.

Kirkby (2020) Possible Black Cockatoo *Calyptorhynchus* spp. Hollow Assessment, Bridges 0753 and 0754, Northam

The purpose of the survey was to assess ten possible black cockatoo breeding hollows located at bridges 0753 and 0754 on the Northam Pithara Road. Hollows were located during a previous survey undertaken by Ecoscape 2020.

All hollows apart from a hollow in tree 13 were too small to be used by black cockatoos as breeding hollows. Two of the hollows in trees 12 and 192 were being used by Galah's. A hollow in tree 16 was possibly being used by a small parrot, probably Australian Ringneck. A hollow in tree 13 (introduced eucalypt) had a hollow entrance large enough for a black cockatoo but was not deep enough to be a breeding hollow. Judging by the faeces in and below the hollow it may have been recently used by Kookaburra Dacelo novaeguineae. Hollows in trees 14 and 199 were blocked.

Dieback Survey

Glevan Consulting (2020) • Northam-Pithara Road Bridge Replacement - Bridge 0753 0754 - Dieback Assessment

Summary

Glevan Consulting conducted an assessment of the survey area associated with the Northam Pithara Bridge Replacement project for the presence of Phytophthora Dieback. The survey area is located on Northam Pithara Road between SLK 4.70 and SLK 5.70 and covers 25.44 hectares.

The assessment was conducted on February 24, 2021 by Glevan Consulting. No Phytophthora Dieback infestations were observed during the assessment. The entire survey area was excluded from the assessment due to being degraded or devoid of vegetation.

No soil and tissue samples were taken during the assessment. A desktop assessment of previous Phytophthora spp. recoveries for the area indicates that Phytophthora has not previously been recovered within, or near the survey area.

Discussion/Conclusion

The majority of the survey was either cleared or completely degraded. As such, these areas could not be assessed for the presence of Phytophthora dieback and were excluded from assessment. There were some vegetated sections associated with a creekline, however these sections contained only degraded wetland vegetation with no indicator species present (Plates 1 & 3). Some of the roadside areas also contained vegetation, but again, there were no indicator species present. Some of this vegetation was

in good condition, however in general, there is little, or no understorey (Plates 2&4), and the levels of disturbance are still too high for Phytophthora dieback occurrence mapping to occur.

The vegetation present throughout the survey area is considered to be unprotectable. It is generally degraded or completely degraded and is associated with water-gaining areas low in the landscape. As there are no protectable areas within the survey area, there are no clean on entry points required. Vehicles and machinery should still be clean when arriving on site to be free of weeds and seeds. After completion of work in the survey area, vehicles and machinery should also be cleaned prior to use in any other project areas that may contain protectable vegetation.