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WESTERN AUSTRALIA

Clearing Assessment Report – CPS 818

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Western Australia.*

Bridge No. 4046 – Replacement
M056 Wongan Hills - Calingiri Road

June 2022

EOS: 2424

Contents

1	PURPOSE	3
2	SCOPE.....	3
2.1	Proposal Scope	3
2.2	Assessment Report Scope.....	4
2.3	Alternatives to clearing.....	7
2.4	Measures to Avoid, Minimise, Reduce and Manage Project Clearing Impacts	7
2.5	Approved Policies and Planning Instruments	8
3	SUMMARY OF SURVEYS	9
3.1	Biological Survey	9
3.1.1	Summary of Biological Survey.....	9
4	VEGETATION DETAILS	10
4.1.1	Proposal Area Vegetation Description.....	10
5	ASSESSMENT AGAINST THE TEN CLEARING PRINCIPLES.....	11
6	ADDITIONAL ACTIONS REQUIRED	19
7	STAKEHOLDER CONSULTATION	20
8	VEGETATION MANAGEMENT.....	20
9	REFERENCES	21
10	APPENDICES	23
	Appendix 1: Supporting Photo Evidence	24
	Appendix 2: Vegetation Management Plan	25
	Appendix 2.1: Vegetation Management	26
	Appendix 2.2: Principal Environmental Management Requirements (PEMR's)	29
	Table 2: Dieback PEMR.....	30
	Table 3: Erosion and Sedimentation	31
	Table 4: Fauna.....	32
	Table 5: Machinery and Vehicle Management	33
	Table 6: Mulch and Topsoil Management	33
	Table 7: Pegging and Flagging	34
	Table 8: Water Drainage.....	34
	Table 9: Weed Management.....	35

Amendments

Report Compilation & Review	Name and Position	Document Revision	Date
Author:	Environment Officer	Draft v1	20-Jun-2022
Reviewer:	Senior Environment Officer	Draft v1	20-Jun-2022
Reviewer:	Senior Environment Officer	Rev 0	14/07/2022
Reviewer:	Senior Environment Officer	Rev 1	25/08/22
Author:	Environment Officer	Rev 2	30-Jan-2023
Reviewer:	Senior Environment Officer	Rev 2	02/02/2023

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 Proposal Scope

Proposal Name:

Bridge 4046 – Replacement, M056 Wongan Hills – Calingiri Road

Proposal Purpose / Components:

Bridge No. 4046 is located on Wongan Hills-Calingiri Road at 40.20 SLK over Scully Brook, approximately 1 km west from the town of Calingiri, in the Shire of Victoria Plains. The Bridge spans 26 m in length, 10 m in width, with a maximum height of 1.6 m. The headroom varies between 0.4-1.1 m.

Bridge 4046 has several defects which were noted as in need of repair following annual inspections (including D22#6089 on 31-Dec-2021). These defects include rotten timbers and dislodged plates on both Abutments 1 and 2; Corbel beams have holes or are crushing on Pier 1 and 2; and all Wingwall piles are in poor condition.

The Scope of Works generally includes:

- Site clearance to accommodate geotechnical investigation.
- Excavation and construction of a sidetrack located East of existing structure. The sidetrack will consist of dual lanes of a 10m width consisting of 8.0m sealed width with 1.0m unsealed shoulders. Batter widths will vary.
- Demolition and removal of existing timber bridge structure.
- Foundation preparation and compaction.
- Installation of precast elements including reinforced concrete box culvert, headwalls and apron slab.
- Rock pitching at both upstream and downstream ends of the culvert.
- Embankment construction behind each wing wall.
- Permanent track construction on the North side of the current bridge.
- Spoon drain construction.
- Pavement works, etc.

The proposed clearing undertaking using CPS 818 is:

0.48 ha of native vegetation.

The proposed temporary clearing undertaking using CPS 818 is:

Nil

Proposal Location(s):

The Proposal area is located on Wongan Hills-Calingiri Road at SLK 40.20 over Scully Brook, approximately 1 km west from the Town of Calingiri, in the Shire of Victoria Plains (as shown in Figure 1).

- GDA: 50J 446975 6559742
- Latitude: -31.0949605
- Longitude: 116.4440654

2.2 Assessment Report Scope

The desktop Study (assessment) area, as shown in Figure 2, is confined to a 10 km radius of the Proposal area.



Figure 1. Proposal Area

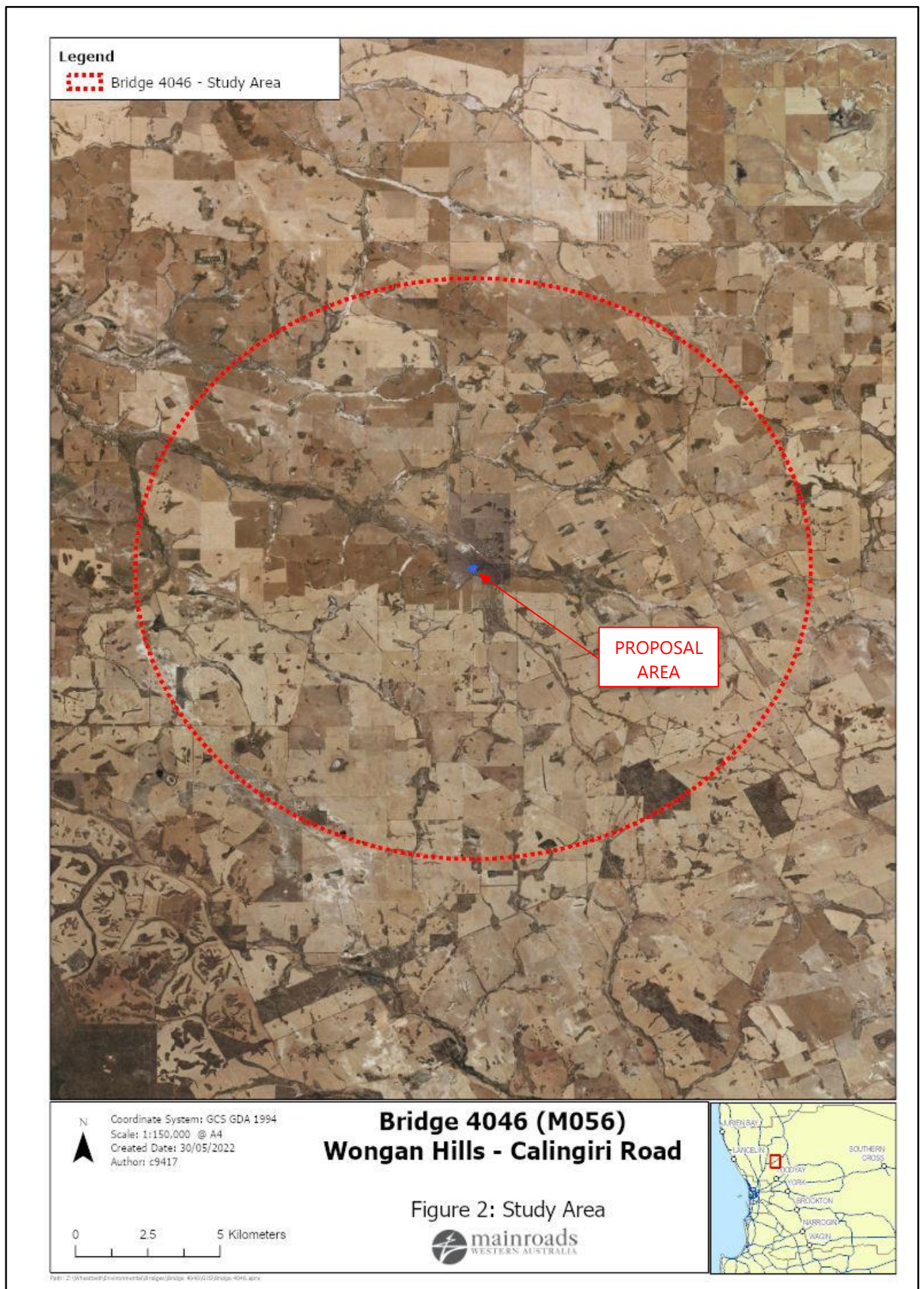


Figure 2. Study Area

2.3 Alternatives to clearing

Little, if any alternative to clearing is relevant to this Proposal. A section of Wongan Hills-Calingiri Road is required to be closed to allow for the bridge to be replaced. As the road is required to remain open to traffic during construction works, a sidetrack is required to be installed.

A sidetrack was selected to be constructed on the northern (Left Hand) side of the road as the vegetation in this area is more degraded than on the southern (Right Hand) side of the road. Further, a Water Corporation pipeline runs along the southern side of the road, reducing the feasibility of constructing a sidetrack on this side of the road (as it may damage this infrastructure).

The side track has been redesigned to reduce the Proposal area, reducing the clearing area from 0.87ha to 0.48ha (0.39 ha reduction)

A laydown area has been identified on the southern side of the road on adjacent agricultural land, reducing clearing required for this infrastructure. Typically, laydown areas are located on the opposite side of the road to the sidetrack to minimise the need for construction workers crossing lanes of live traffic, thus improving worker safety.

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 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
Steepen batter slopes	Not applicable with this Proposal.
Installation of safety barriers	Not applicable with this Proposal.
Alignment to one side of existing road	Due to the location of the road and the surrounding degraded vegetation, constructing a sidetrack on the northern side of Wongan Hills-Calingiri Road was considered the best option to reduce the impact on remnant vegetation.
Alternative alignment to follow existing road (or) to preferentially locate within pasture or a degraded area.	Not applicable with this Proposal.
Installation of kerbing.	Not applicable with this Proposal.
Simplification of design to reduce number of lanes and/or complexity of intersections	The sidetrack on the northern side of the bridge was considered the best alternative and allows for a temporary laydown area to be used within pre-existing cleared farmers paddock.
Preferential use of existing cleared areas for access tracks, construction storage and stockpiling	The use of a pre-existing cleared farmer's paddock area on the southern side of Wongan Hills-Calingiri Road was considered the preferable option for the laydown area.
Drainage modification	Being a bridge Proposal, a culverted sidetrack will be installed. Once bridgeworks are complete, the sidetrack will be removed.

2.5 Approved Policies and Planning Instruments

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

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

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

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

Environmental Protection Policies

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

Other Relevant policies and guidance documents:

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

3 SUMMARY OF SURVEYS

3.1 Biological Survey

Ecologia Environment (2022) (Ecologia) completed Biological Surveys for Bridge 4046, including a desktop assessment, a low intensity flora and vegetation survey, a basic fauna and fauna habitat assessment, and a black cockatoo habitat assessment between 27 October and 5 November 2021.

Section 3.1.1 contains the summary of the survey.

3.1.1 Summary of Biological Survey

The biological survey covered 2.3 ha around Bridge 4046, approximately 100 m on each abutment side and 60 m wide. Using the survey information Ecologia mapped a wider vegetation context area of approximately 110 ha. A desktop assessment was completed using a buffer of 20 km around the bridge.

Twenty-nine flora taxa were recorded in the survey area, comprising of 17 (58.6 %) introduced species and 12 (41.4 %) native species. None of the introduced species were identified as Declared Pests or 'Weeds of National Significance' (WONS). Additionally, no State-listed Threatened or Priority species were reported in the survey area.

Vegetation occurring over 1.76 ha (84.6%) of the 2.3 ha survey area was mapped to be in Degraded condition. The remaining area is not relevant to this Clearing Assessment Report or is already cleared as road, road reserve or agricultural land.

One vegetation type was recorded in the survey area (asterisk indicates weed species):

- CoMbHg (1.76 ha) - Casuarina tall open woodland dominated by an upper canopy (*Casuarina obesa* and *Eucalyptus loxophleba* subsp. *loxophleba*) a low understory (*Maireana brevifolia* and *Tecticornia halocnemoides*) with an understory of herbs/grasses (**Avena barbata*, **Ehrharta longiflora* and **Hypochaeris glabra*).

Ecologia did not observe any plant communities within the survey area that corresponded to any state (DBCA) or Commonwealth (EPBC Act) listed Threatened Ecological Community (TEC), or state listed Priority Ecological Community.

The basic fauna assessment recorded fauna that was generally common and not restricted to the survey area. Two broad fauna habitat types occur in the survey area, consisting of Sheoak Woodland (1.76 ha) and Drainage Line (0.19 ha). The remaining survey area was mapped as Cleared (0.36 ha).

Eight vertebrate fauna species were recorded during the survey including six birds and two mammals (one introduced). No Threatened (EPBC Act/BC Act), Specially Protected or Priority listed species were recorded during the survey. The post-survey analysis determined a 'likelihood of occurrence' of four DBCA significant species which may occur in the area due to the habitat type and location. These species include one 'Likely' occurrence being Carnaby's Cockatoo (*Calyptrorhynchus latirostris*) and three 'Possible' occurrences, which include Forest Red-tailed Black Cockatoo (*Calyptrorhynchus Banksii naso*), Peregrine Falcon (*Falco peregrinus*) and Shield-backed Trapdoor Spider (*Idiosoma nigrum*).

The onsite assessment investigated potential breeding, night roosting, and foraging habitats for black cockatoo species within the survey area. Although the Study area intersects a confirmed breeding area (15km from the Proposal area) for Carnaby's Cockatoo, the survey area lacks mature eucalypts which may be used as breeding or roosting habitat. No DBH trees were recorded within

the survey area. No *Banksia*, *Hakea* or *Grevillea* species (known as Carnaby's Cockatoo foraging and common food items) were recorded as dominant within the survey area.

4 VEGETATION DETAILS

4.1.1 Proposal Area Vegetation Description

Ecologia (2022) undertook a detailed flora and vegetation survey of Bridge 4046 Proposal area. The Proposal area consisted of one vegetation type (CoMbHg), covering approximately 0.48 ha within the 0.83 ha Proposal area. The remaining 0.35 ha is cleared land comprising of roads, road reserves and agricultural land.

The vegetation type was not considered to be of state significance based on not meeting the following criteria: (1) Presence of State-listed Threatened plant species; (2) presence of TECs; and (3) land within a Conservation Estate.

Ecologia reported the vegetation map code of the Proposal area as follows:

Map Code	Landform	Description	Condition	Area (ha) (%)
CoMbHg	Creek, Plain, Undulating plain	± <i>Casuarina obesa</i> , ± <i>Eucalyptus loxophleba</i> subsp. <i>loxophleba</i> tall open woodland to open forest; <i>Maireana brevifolia</i> , <i>Tecticornia halocnemoides</i> low shrubland; <i>Hypochaeris glabra</i> , <i>Ehrharta longiflora</i> , <i>Avena barbata</i> herb/grassland.	Degraded	0.48 (58 %)

Tables 2 and 3 provide broad details of the pre-European vegetation associations within the Proposal area and the remaining extents of these associations.

Table 2. Summary of Proposal Areas Mapped Pre-European Vegetation Associations

Pre-European Vegetation Association(s)	Clearing Description	Vegetation Condition	Comments
Vegetation Association 7 described as Medium woodland; York gum & wandoo (Government of Western Australia, 2019)	Clearing of up to 0.12 ha for bridge 4046 Proposal	Degraded (EPA 2016)	Vegetation description and condition determined from Ecologia (2022)
Vegetation Association 1022 described as Succulent steppe with woodland; <i>Casuarina obesa</i> & samphire (Government of Western Australia, 2019)	Clearing of up to 0.36 ha for bridge 4046 Proposal	Degraded (EPA 2016)	Vegetation description and condition determined from Ecologia (2022)

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. 7	Statewide	179,724	22,885	12.73	5.31
	IBRA Bioregion <i>Avon Wheatbelt</i>	144,190	15,279	10.60	1.02
	IBRA Sub-region <i>Katanning</i>	144,017	15,274	10.61	1.02
	Local Government Authority <i>Shire of Victoria Plains</i>	111,345	12 850	11.54	2.62
Veg Assoc No. 1022	Statewide	456	177	38.90	0
	IBRA Bioregion <i>Avon Wheatbelt</i>	456	177	38.90	0
	IBRA Sub-region <i>Katanning</i>	456	177	38.90	0
	Local Government Authority <i>Shire of Victoria Plains</i>	456	177	38.90	0

5 ASSESSMENT AGAINST THE TEN CLEARING PRINCIPLES

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

<p>Proposed clearing is not likely to be at variance to this Principle</p> <p>The Proposal requires the clearing of up to 0.48 ha of native vegetation within a Proposal area of approximately 0.83 ha. Ecologia (2022) reports the vegetation condition as Degraded.</p> <p>58% (0.48 ha) of the vegetation mapped in the Proposal area was in Degraded condition. The remaining area mapped (0.35 ha, 42%) was already cleared and is either a road, road reserve or agricultural land. The Proposal area is mapped as Beard Vegetation Association 7 described as Medium woodland; York gum & wandoo, and Vegetation Association 1022 described as Succulent steppe with woodland; <i>Casuarina obesa</i> & samphire.</p> <p>Ecologia mapped one vegetation type within the Proposal area, namely <i>Casuarina</i> tall open woodland: \pm<i>Casuarina obesa</i>, \pm<i>Eucalyptus loxophleba</i> subsp. <i>loxophleba</i> tall open woodland to open forest; <i>Maireana brevifolia</i>, <i>Tecticornia halocnemoides</i> low shrubland; <i>Hypochaeris glabra</i>, <i>Ehrharta longiflora</i>, <i>Avena barbata</i> herb/grassland.</p> <p>Based on Ecologia's vegetation mapping, the Beard vegetation mapping may not reflect the on-ground conditions, with the mapped vegetation being more consistent with Vegetation Association 1022.</p> <p>TEC/PEC</p> <p>Ecologia undertook a TEC assessment as part of its Biological survey. No state (DBCA) or Commonwealth listed TECs were recorded within the Proposal area (or wider survey area). Although the Eucalypt Woodlands TEC was predicted to occur within some of the survey area based on DBCA mapping, the patches of eucalypt woodland present were all considered to be either too degraded to correspond to the TEC or had contra-indicator species (<i>Casuarina obesa</i>) dominant in the canopy layer. The species in the Proposal area are not representative of the species detailed in the Wheatbelt Woodlands TEC Factsheet (D19#584174).</p> <p>Flora</p> <p>Desktop searches by Ecologia (2022) identified previous records of 11 Threatened species, two Priority 1 taxa, two Priority 2 taxa, nine Priority 3 taxa and five Priority 4 taxa within the 20km Study area.</p>
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Ecologia undertook a pre-survey likelihood of occurrence assessment based on database searches and likely habitat in the Study area. Fourteen Threatened and Priority taxa were considered 'Likely' to occur, and thirty taxa were considered 'Possible'.

Ecologia did not record any Threatened or Priority flora within the Proposal area (or wider survey area) during its field survey.

The likelihood of occurrence of these species was reassessed following the field survey based on survey effort, the presence of suitable habitat, vegetation condition, and seasonal conditions. All suitable habitat was searched for significant species within the survey area, and seasonal conditions were appropriate for the detection of annual species. Consequently, Ecologia considered the likelihood of occurrence of all Threatened and Priority species listed in the desktop assessment to be 'Unlikely' post-survey primarily due to the overall condition of the vegetation.

Fauna

Ecologia identified one fauna habitat type within the Proposal area, namely Sheoak Woodland. The following conservation significant species were considered Likely or Possible to occur in the Proposal area:

- Carnaby's Cockatoo (*Calyptrorhynchus latirostris*) (EN) – Likely
- Shield-backed Trapdoor Spider (*Idiosoma nigrum*) (EN) – Possible
- Forest Red-tailed Black Cockatoo (*Calyptrorhynchus banksii naso*) (VU) – Possible
- Peregrine Falcon (*Falco peregrinus*) (OS) - Possible

No conservation significant fauna was recorded from within the Proposal area (or wider survey area). In relation to the identified species Ecologia (2022) reported the following:

- Black cockatoos rely on foraging resources to provide sufficient energy for their movements across their range and availability of foraging habitat plays a critical role in the post-breeding period when individuals need to build condition after breeding and teach juveniles where these foraging resources are located (Commonwealth of Australia 2017). Ecologia reported that there were no species of Banksia, Hakea or Grevillea recorded as dominant in the survey area, indicating low black cockatoo foraging potential. Further, there was no evidence of black cockatoo breeding hollows or secondary evidence of foraging (eg chewed fruit/nuts), or mature Eucalypts within the Proposal area.
- According to Main (1996; 2003) the Shield-backed Trapdoor Spider typically inhabits clay soils of eucalypt woodlands and acacia vegetation and relies heavily on leaf litter and twigs to build its burrow. The main threats to the Shield-backed Trapdoor Spider are land clearance and habitat fragmentation, salinity, and grazing of habitat by stock and feral animals (Main, 2003; DEC, 2009). Due to the degraded vegetation habitat from clearing, invasive weeds and lack of leaf litter and twigs, the species is unlikely to occur within the Proposal area. The closest known recording of the Shield-backed Trapdoor Spider is 4.3 km (1953) south of the Proposal area in 1953 at First Creek and 6.4 km (2012) north of the Proposal area.
- Peregrine Falcon may fly over and utilise habitat surrounding the bridge but is not reliant on the vegetation for foraging.

Given the predicted lack of Threatened and Priority flora; assessed lack of TEC/PEC; low quality or unsuitable habitat for black cockatoos and the Shield-backed Trapdoor Spider; the proposed clearing being linear in nature of which there is more than 2,900 ha of similar and better-quality habitat within 10km of the Proposal area; and that no DBH trees (with or without) suitable hollows will be cleared, the proposed clearing is not likely to have a significant impact on the biodiversity of this area. Accordingly, the proposed clearing is **not likely** to be at variance to this Principle.

Methodology

Ecologia (2022)

DBCA shapefiles

EPA (2016, 2020)

Main (1996; 2003)

Main Roads GIS Shapefiles

Florabase (Accessed 2-Jun-2022)

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

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

Ecologia (2022) identified six species of conservation significant fauna from Threatened and Priority fauna database searches within a 20km Study area, including four Threatened species (two birds, one invertebrate and one mammal), one Specially Protected bird species and one Priority mammal species. Of the species identified, four were considered to be either 'Likely' or 'Possible' to occur within the wider survey area. Commentary of these species is detailed below:

Species	Likelihood	Habitat and distribution	Comments
Carnaby's Cockatoo (<i>Calyptorhynchus latirostris</i>) (EN)	Likely	Breeding habitat restricted to eucalypt woodlands in the wheatbelt, jarrah-marri forests of the Darling Scarp and tuart forests of the Swan Coastal Plain. Foraging habitat includes banksia woodlands, marri and jarrah. Outside of the breeding season, the species generally roosts in tall eucalypts near riparian environments and permanent water sources.	The species has the potential to occur at Bridge 4046. The species requires hollows from eucalypt trees (<i>E. loxophelba</i> and <i>E. wandoo</i>) for nesting, and foraging species from various angiosperm genus species (Banksia, Eucalyptus, Grevilia, Hakea etc). No evidence of black cockatoo breeding hollows or foraging occur within the Proposal area.
Shield-backed Trapdoor Spider (<i>Idiosoma nigrum</i>) (EN)	Possible	Restricted distribution in the central and central-western Wheatbelt bioregion of south-western Australia. The shield-back spider typically inhabits clay soils of eucalypt woodlands and acacia vegetation and relies heavily on leaf-litter and twigs to build its burrow (Main, 1996; 2003).	The survey area is situated within the Wheatbelt bioregion and may contain suitable habitat for this species.
Forest Red-tailed Black Cockatoo (<i>Calyptorhynchus banksii naso</i>) (VU)	Possible	Breeds and roosts in dense jarrah, karri and marri forests mainly in the hilly interior. Foraging habitat includes jarrah and marri woodlands and forest and the edges of karri forests.	Species were deemed location present, however only been recorded on a single occasion in the area.
Peregrine Falcon (<i>Falco peregrinus</i>) (OS)	Possible	Occurs near cliffs along coasts, rivers and ranges, and around wooded watercourses and lakes.	Species may fly over and utilise habitat surrounding the bridge.

Ecologia identified one fauna habitat in the Proposal area, namely Sheoak Woodland (0.73 ha). Ecologia broadly described the habitat as patches of Sheoak with an overstory of hollow bearing eucalypts providing leaf litter and woody debris that are suitable for invertebrates and mammals. The canopy within this habitat type provides shelter and foraging opportunities for birds and arboreal mammals, including the Carnaby's Cockatoo, and Forest Red-tailed Black Cockatoo and both Phascogale species. However, as the biological report covered nine bridges, the habitat description was not specific to this particular bridge.

Ecologia reported a single confirmed Carnaby's Cockatoo roost site located 15 km from the Bridge 4046 survey area. Although the Study area intersects a confirmed breeding area for the Carnaby's Cockatoo, the survey area at Bridge 4046 lacks mature eucalypts which may be used as breeding or roosting habitat.

Black cockatoos rely on foraging resources to provide sufficient energy for their movements across their range and availability of foraging habitat plays a critical role in the post-breeding period when individuals need to build condition after breeding and teach juveniles where these foraging resources are located (Commonwealth of Australia 2017). Ecologia reported that there were no species of Banksia, Hakea or Grevillea recorded as dominant in the survey area, indicating low black cockatoo foraging potential.

Accordingly, the removal of 0.48 ha of vegetation is highly unlikely to be part of, or is necessary for the maintenance of, a significant habitat for Carnaby's and Forest Red-tailed Black Cockatoos.

According to Main (1996; 2003) the Shield-backed Trapdoor Spider typically inhabits clay soils of eucalypt woodlands and acacia vegetation and relies heavily on leaf litter and twigs to build its burrow. The main threats include land clearing, habitat fragmentation, salinity, grazing (Main, 2003; DEC), and inappropriate fire regimes. The main threats to the Shield-backed Trapdoor Spider are land clearance and habitat fragmentation, salinity, and grazing of habitat by stock and feral animals (Main, 2003; DEC 2009). Due to the degraded vegetation habitat from clearing, invasive weeds and lack of leaf litter and twigs, the species is unlikely to occur within the Proposal area. The closest known recording of the Shield-backed Trapdoor Spider is 4.3 km (1953) south of the Proposal area in 1953 at First Creek and 6.4 km (2012) north of the Proposal area.

Peregrine Falcon may fly over and utilise habitat surrounding the bridge but is not reliant on the vegetation for foraging. The removal of 0.48 ha of vegetation is highly unlikely to be part of, or is necessary for the maintenance of, a significant habitat for Peregrine Falcon.

The proposed clearing area is adjacent to the existing road, linear in nature and covering only 0.48 ha of vegetation, consisting predominantly of weeds and non-native grass covering and a canopy of *Casuarina obesa* on the fringing boundary of the Proposal area. Therefore, it is unlikely that any fauna habitat values will be significantly impacted,

Given the above, the Proposal area does not comprise the whole or a part of, or is necessary for the maintenance of, a significant habitat for indigenous fauna and **is not likely** to be at variance to this Principle.

Methodology

Ecologia (2022)

DBCA Shapefiles

DBCA website

EPA (2016, 2020)

Main (1996; 2003)

Main Roads Site Inspection (08-Apr-2022)

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

Proposal is not likely to be at variance to this Principle

Ecologia (2022) undertook a pre-survey likelihood of occurrence assessment based on database searches and likely habitat in the Study area. Four Threatened flora taxa were considered 'Likely' to occur, and seven taxa were considered 'Possible'.

Ecologia did not record any Threatened flora within the Proposal area (or wider survey area) during its field survey.

The likelihood of occurrence of these species was reassessed following the field survey based on survey effort, the presence of suitable habitat, vegetation condition, and seasonal conditions. All suitable habitat was searched for significant species within the survey area, and seasonal conditions were appropriate for the detection of annual species. Consequently, the likelihood of occurrence of all Threatened species listed in the desktop assessment is considered to be 'Unlikely' post-survey primarily due to the overall condition of the vegetation.

Accordingly, the proposed clearing is **not likely to be at variance** of this clearing Principle.

Methodology

Ecologia (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

Ecologia (2022) undertook a TEC assessment as part of its Biological survey. No state (DBCA) or Commonwealth listed TECs were recorded within the Proposal area (or wider survey area). Although the Eucalypt Woodlands TEC was predicted to occur within some survey areas based on DBCA data, the patches of eucalypt woodland present were all considered to be either too degraded to correspond to the TEC or had contra-indicator species (*Casuarina obesa*) dominant in the canopy layer.

The dominant canopy species in the Proposal area are not representative of the indicator species detailed under Wheatbelt Woodlands TEC Factsheet (D19#584174) as:

Contra-indicator and Threshold	Variable	Comment
A dominant presence of non-eucalypt species (e.g., Sheoak, Banksia) in the tree canopy. However, these non-eucalypt species can be present as an understorey or minor canopy component of the TEC.	Species	The vegetation type (CoMbHg) canopy cover within the Proposal area is <i>Casuarina obesa</i> (Swamp Sheoak)

Accordingly, the Proposal **is not** at variance to this Clearing Principle.

Methodology

Ecologia (2022)

Main Roads Factsheet

(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 Proposal proposes to clear up to 0.48 ha within a 0.83 ha Proposal area and is mapped as containing pre-European (Beard) Vegetation Association 7 described as Medium woodland; York gum & wandoo, and Vegetation Association 1022 described as Succulent steppe with woodland; *Casuarina obesa* & samphire, as shown in the tables below.

Vegetation Association 7 retains 12.73% of its pre-European extent at the Statewide scale, and 10.60% at the IBRA bioregion scale and 11.54% at a LGA level. Vegetation Association 1022 retains 38.90% of its pre-European extent at all scales (Statewide, Region, Bio Region, LGA).

The national objectives and targets for biodiversity conservation in Australia target retaining at least 30% of the pre-European extent of vegetation communities (Commonwealth of Australia, 2001).

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

Pre-European Vegetation Association(s)	Clearing Description	Vegetation Condition	Comments
Vegetation Association 7 described as Medium woodland; York gum & wandoo (Government of Western Australia, 2019)	Clearing of up to 0.12 ha for bridge 4046 Proposal	Degraded (EPA 2016)	Vegetation description and condition determined from Ecologia (2022)
Vegetation Association 1022 described as Succulent steppe with woodland; <i>Casuarina obesa</i> & samphire (Government of Western Australia, 2019)	Clearing of up to 0.36 ha for bridge 4046 Proposal	Degraded (EPA 2016)	Vegetation description and condition determined from Ecologia (2022)

Pre-European Vegetation Representation

Pre-European Vegetation Association	Scale	Pre-European (ha)	Current Extent (ha)	% Remaining	% Remaining in DBCA reserves
Veg Assoc No. 7	Statewide	179,724	22,885	12.73	5.31
	IBRA Bioregion <i>Avon Wheatbelt</i>	144,190	15,279	10.60	1.02
	IBRA Sub-region <i>Katanning</i>	144,017	15,274	10.61	1.02
	Local Government Authority <i>Shire of Victoria Plains</i>	111,345	12,850	11.54	2.62
Veg Assoc No. 1022	Statewide	456	177	38.90	0
	IBRA Bioregion <i>Avon Wheatbelt</i>	456	177	38.90	0
	IBRA Sub-region <i>Katanning</i>	456	177	38.90	0
	Local Government Authority <i>Shire of Victoria Plains</i>	456	177	38.90	0

Ecologia (2022) mapped vegetation within the Proposal area (and wider survey area) to be in a Degraded condition. The primary cause was the presence of invasive weed species and non-native grasses, potentially caused by surrounding agricultural lands.

Ecologia mapped the Proposal area as a *Casuarina* tall open woodland. The vegetation description is described as an upper storey dominated by *Casuarina obesa*, *Eucalyptus loxophleba* subsp. *loxophleba*, with low shrubland species consisting of *Maireana brevifolia*, *Tecticornia halocnemoides*, and an understory of herbs and grasses such as *Hypochaeris glabra*, *Ehrharta longiflora*, *Avena barbata*.

Based on Ecologia's vegetation mapping, it appears that the Beard vegetation mapping may not reflect on-ground conditions, with the mapped vegetation being more consistent with Vegetation Association 1022, which meets the national objectives and targets for biodiversity conservation of at least 30%.

According to DAFWA, over 2,900 ha of remnant vegetation is mapped at a 10km local level.

The clearing for the Proposal is not likely to have a significant impact on the remaining extent of either of these vegetation associations at the subregion, LGA or local (10km) level.

As the native vegetation is not considered to be significant as a remnant of native vegetation in this area, the Proposal is **not likely to be at** variance with this Principle.

Methodology

Commonwealth of Australia (2001)

DAFWA GIS Shapefiles

Ecologia (2022)

EPA (2016)

Government of Western Australia (2019)

Shepherd (2009)

(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 Proposal area is adjacent to Scully Brook, a mapped minor non-perennial watercourse.

The clearing of vegetation for the Proposal encompasses one vegetation type (CoMbHg), which occurs in a range of landforms. Clearing of this vegetation type immediately adjacent to the drainage line (including the drainage line with a 10m buffer) is within the area of a Bed and Banks Permit and will not be undertaken under CPS 818. The drainage line is identified as a minor intermittent creek and the riparian zone is likely to be relatively narrow. Vegetation in the proposal area for the CPS818 is not considered riparian vegetation.

Accordingly, clearing **is not at variance** with this Clearing Principle.

Methodology

Ecologia (2022)

DWER and DBCA shapefiles

Main Roads Site Inspection (08-Apr-2022)

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

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

DAFWA risk mapping indicates soil in the Proposal area has a low risk of water erosion, a high to extreme risk of wind erosion, a moderate to high risk of salinity, and a moderate to very high-water logging risk.

ASRIS mapping indicates that the Proposal area is located in an area with a low probability of Acid Sulphate Soils.

Given the small area of clearing (0.48 ha), the linear nature of the clearing and sealing of areas for road construction, the proposed clearing is not likely to lead to an appreciable increase in land degradation. Standard erosion and dust management control measures will be implemented during construction to reduce the incidence of wind erosion. As construction is proposed to occur in summer, this will reduce the potential for water erosion and waterlogging.

Accordingly, this Proposal **is not likely** to be at variance to this Principle.

Methodology

Bureau of Meteorology Australia (2022)

CSIRO (Accessed 08-Jun-2022)

Natural Resource Management SLIP Soil Systems (Accessed 08-Jun-2022)

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

Proposed clearing is not at variance to this Principle

There are no DBCA managed lands in the vicinity of the Proposal area. The nearest DBCA managed land is Boodadong Nature Reserve located 9.3km west-south-west of the Proposal area. At this distance, the Proposed clearing is not expected to impact on the values of this reserve.

Accordingly, clearing of vegetation will not have an impact on the environmental values of any adjacent or nearby conservation area.

Given the above, this Proposal **is not** at variance of this Principle.

Methodology

DBCA shapefiles

(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
<p>The Proposal area is adjacent to Scully Brook, a mapped minor non-perennial waterway. Clearing will not deteriorate the quality of the surface water in this watercourse as works are proposed for dry conditions and is therefore unlikely that there will be any change to the water quality of this area.</p> <p>The Proposal is not located within a Public Drinking Water Source Area, Groundwater Area or within a CAWS Act Catchment, although is located in a Surface Water Area proclaimed under the RIWI Act.</p> <p>It is unlikely that dewatering will be required during construction and clearing of a relatively small area of native vegetation over the Proposal length is not likely to impact on groundwater quality.</p> <p>The works are planned to occur in the summer months, reducing the rain generated runoff into Scully Brook. If the Brook contains water, then appropriate silt curtains will be installed to minimise impacts outside the immediate disturbance area. A rock protection layer is also proposed to be installed downstream of the bridge designed to reduce flow generated erosion.</p> <p>Given no dewatering or major drainage modifications are likely to be required and the scale of clearing is relatively minor and linear in nature, no deterioration of surface or underground water levels or quality is expected to result from clearing. The Proposal is not likely to be at variance to this Principle.</p>
<p>Methodology</p> <p>Main Roads Site Inspection (08-Apr-2022)</p> <p>DWER and DBCA shapefiles</p> <p>EPA (2016)</p>

(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
<p>Calingiri (1 km east of the Proposal area) receives an average rainfall of 496mm per year (Bureau of Meteorology Australia, 2022), predominantly from May to October.</p> <p>ASRIS Soil Map indicates a topsoil sand content of up to 20% sand, and a subsoil clay content of 40-60%.</p> <p>According to DPIRD Soil Landscape Mapping, the Proposal area contains two landscape units:</p> <ul style="list-style-type: none"> • Morbinning 4 Subsystem (6076) described as narrow tributary valleys of the Goomalling system with duplex soils, and • Greenhills 4 Subsystem (6075) described as tributaries of the Mortlock River, expressing flat, narrow valleys with saline soils, semi-wet soils and grey sandy duplexes. <p>Sandy soils typically have a significant infiltration capacity, so it is unlikely that runoff or flooding will occur as a result of the proposed clearing.</p> <p>DAFWA risk mapping indicates the soils of the Proposal area have a low risk of water erosion, and a moderate to very high-water logging risk.</p> <p>Given the linear nature of the clearing, the relatively sandy nature of the soil, the relatively flat topography of the Proposal area and that works are proposed to be conducted during the summer months, the proposed clearing is unlikely to cause or exacerbate the incidence or intensity of flooding.</p> <p>Accordingly, the clearing is not likely to be at variance to this Principle.</p>
<p>Methodology</p> <p>DPIRD risk mapping (Accessed May 2022))</p> <p>Natural Resource Management SLIP Soil Systems (Accessed 17-May-2022)</p>

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
<p>1. The CAR indicates that the clearing is 'At Variance' or 'May be at Variance' with one or more of the Clearing Principles.</p> <p>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:</p> <ul style="list-style-type: none"> (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; <p>the preparation of an Assessment Report, as required by condition 6(e), is not required.</p>	No	No further action required.
<p>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.</p>	No	No further action required.
<p>3. The project involves clearing for temporary works (as defined by CPS 818).</p>	No	No further action required.
<p>4 a. Project is within Region that:</p> <ul style="list-style-type: none"> - 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 	No	Standard hygiene measures will be implemented and works are proposed to be conducted in the summer months.
<p>4b. Does the proposed works require clearing within or adjacent to DBCA estate in non-dry conditions?</p>	No	No further action required.
<p>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</p>	No	No further action required.
<p>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</p>	No	No further action required.

7 STAKEHOLDER CONSULTATION

Main Roads is not required to undertake stakeholder consultation 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 this clearing is kept to a minimum.

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10 APPENDICES

Appendix	Title
Appendix 1	Supporting Photo Evidence

Appendix 1: Supporting Photo Evidence

SITE PHOTOS



Photo 1: Water pipe (Southside 1)



Photo 2: Water pipe (Southside 2)



Photo 3: Side-track (looking NE 1)



Photo 4: Side-track (looking NE 2)



Photo 5: Side-track (looking NW 1)



Photo 6: Side-track (looking NW 2)

Appendix 2: Vegetation Management Plan

BRIDGE NO. 4046 – REPLACEMENT – M056 – WONGAN HILLS CALINIGIRI ROAD, CALINGIRI

Purpose and Scope

This Vegetation Management Plan (VMP) has been prepared by Main Roads for the purpose of managing native vegetation clearing impacts associated with the Bridge No. 4046 Replacement project.

Bridge No. 4046 is located on Wongan Hills Calingiri Road at SLK 40.20 over Scully Brook, approximately 1 km east of the Town of Calingiri, in the Shire of Victoria Plains. Bridge No. 4046 requires the removal of the existing timber structure and the construction of a new concrete bridge, consisting of the installation of precast box culverts, headwalls and apron slabs, and rock pitching, embankment construction, and spoon drains. In addition, a sidetrack is to be constructed on the North side of Wongan Hills Calingiri Road to enable the road to remain open during bridgeworks.

In specified circumstances, Main Roads VMP is required to be approved by Department of Water and Environmental Regulation (DWER) as a condition of Main Roads Statewide Clearing Permit CPS 818.

Action

Appendix 2.1 references the standard Principal Environmental Management Requirements (PEMRs) (Table's 1 to 9) that will be utilised for all projects that involve clearing to avoid, mitigate and manage the environmental impacts of the project.

Project Specific Environmental Management Requirements are contained in Table 1.

Timeframes

Actions shall be undertaken in accordance with those described in the relevant PEMR and the Project Specific Environmental Management Requirements.

Responsibilities

It is the responsibility of the Superintendent's Contract Management Team to ensure that the requirements are implemented by the Contractor. This shall be done by adhering to the Environmental Measurement and Evaluation Checklist.

Appendix 2.1: Vegetation Management

VMP Requirement	Standard Management Action	Specific Management Action
Clearing	<p>Refer to Table 1: Clearing PEMR</p> <ul style="list-style-type: none"> • Specification 204 Environmental Management • Construction Environmental Management Plan • Specification 301 Vegetation Clearing and Demolition • Environment Measurement and Evaluation Checklist (for release of HOLD POINTS) <p>Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/</p>	<p>Refer to Appendix 2.2</p> <p>Further, the Contractor must also provide environmental training to limit the level of clearing. The clearing area will be flagged with PINK tape to provide a boundary of the Clearing area, with maps and pictures to show contractors during inductions/Toolbox meetings.</p>
Dieback Management	<p>Refer to Table 2: Dieback PEMR</p> <ul style="list-style-type: none"> • Specification 204 Environmental Management • Construction Environmental Management Plan <p>Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/</p>	Refer to Appendix 2.2
Erosion and Sedimentation Control	<p>Refer to Table 3: Erosion and Sedimentation Control PEMR</p> <ul style="list-style-type: none"> • Specification 204 Environmental Management • Construction Environmental Management Plan <p>Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/</p>	Refer to Appendix 2.2
Fauna	<p>Refer to Table 4: Fauna PEMR</p> <ul style="list-style-type: none"> • Specification 204 Environmental Management • Construction Environmental Management Plan <p>Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/</p>	Refer to Appendix 2.2

VMP Requirement	Standard Management Action	Specific Management Action
Machinery and Vehicle Management	<p>Refer to Table 5: Machinery and Vehicle Management PEMR</p> <ul style="list-style-type: none"> • Specification 204 Environmental Management • Construction Environmental Management Plan <p>Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/</p>	Refer to Appendix 2.2
Mulch and Topsoil Management	<p>Refer to Table 6: Mulch and Topsoil Management</p> <ul style="list-style-type: none"> • Specification 204 Environmental Management • Construction Environmental Management Plan • Specification 301 Vegetation Clearing • Specification 304 Revegetation and Landscaping <p>Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/</p>	<p>Refer to Appendix 2.2</p> <p>The Contractor must return topsoil and mulched vegetation as close to the area from where it was removed as practical - consistent with boundaries of each vegetation community.</p>
Pegging and Flagging	<p>Refer to Table 7: Pegging and Flagging PEMR</p> <ul style="list-style-type: none"> • Specification 204 Environmental Management • Construction Environmental Management Plan • Specification 301 Vegetation Clearing and Demolition <p>Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/</p>	Refer to Appendix 2.2
Water Drainage Management	<p>Refer to Table 8: Water Drainage PEMR</p> <ul style="list-style-type: none"> • Specification 204 Environmental Management • Construction Environmental Management Plan 	Refer to Appendix 2.2
Weed Management	<p>Refer to Table 9: Weed Management PEMR</p> <ul style="list-style-type: none"> • Specification 204 Environmental Management 	Refer to Appendix 2.2

VMP Requirement	Standard Management Action	Specific Management Action
	<ul style="list-style-type: none"> Construction Environmental Management Plan <p>Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/</p>	
Monitoring	<ul style="list-style-type: none"> Specification 204 Environmental Management Construction Environmental Management Plan Superintendent's Contract Management Plan & Environmental Measurement and Evaluation Checklist. <p>Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/</p>	Refer to Appendix 2.2
Auditing	<ul style="list-style-type: none"> Specification 204 Environmental Management Superintendent's Contract Management Plan & Environmental Measurement and Evaluation Checklist. <p>Contract Tender Documents available at https://www.mainroads.wa.gov.au/technical-commercial/tender-preparation/</p>	Refer to Appendix 2.2

Principal Environmental Management Requirements (PEMR's)

Appendix 2.2: Principal Environmental Management Requirements (PEMR's)

Table 1: Clearing PEMR

STANDARD MANAGEMENT ACTIONS

STANDARD MANAGEMENT REQUIREMENTS
<p>PRE WORKS</p> <ol style="list-style-type: none">1. The Contractor must prepare, implement and maintain processes to ensure that the movement of all vehicles, plant and machinery does not occur outside of the Limits of Vegetation Clearing. This must include all turnaround areas.2. The Contractor must minimise vegetation clearing and the area of disturbance on ground by utilising existing cleared area where possible.
<p>DURING WORKS</p> <ol style="list-style-type: none">1. The Contractor must report any damage to vegetation beyond the Limits of Vegetation Clearing as an Environment Incident.2. The Contractor must ensure Movements are confined to the Limits of Vegetation Clearing during the works3. The Contractor must undertake the clearing in accordance with the Fauna PEMR.
<p>POST WORKS</p> <ol style="list-style-type: none">1. NIL

Table 2: Dieback PEMR**STANDARD MANAGEMENT ACTIONS**

STANDARD MANAGEMENT REQUIREMENTS
<p>PRE WORKS</p> <ol style="list-style-type: none"> 1. Contractor's Pre-starts must detail the requirements from the DMP/HMP, where relevant, dieback management areas and the requirements of each area, maps of infested and uninfested locations, and hygiene requirements 2. Where relevant a copy of the DMP/HMP must be onsite. This plan will include maps of management areas and obligatory control actions 3. Prescribe where vehicles, machinery and plant are going to be stored/parked during the works. 4. Use the Plant, Vehicle and Equipment Hygiene Checklist or equivalent Hygiene form to check that all machinery and vehicles are clean on entry (i.e. free of soil and vegetation).
<p>DURING WORKS</p> <ol style="list-style-type: none"> 1. If required, locations of dieback infested or dieback free areas and hygiene control locations marked on site in accordance with contract HMP or DMP. 2. Hygiene works to be undertaken as per the HMP or DMP, where required. 3. Restrict movement of machines and other vehicles to the Limits of Vegetation Clearing. 4. Ensure no known weed affected soil, mulch, fill or other material is brought into the Limits of Vegetation Clearing. 5. Ensure cleared materials are stockpiled or disposed at waste at the locations approved by the Superintendent.
<p>POST WORKS</p> <ol style="list-style-type: none"> 1. Record that the project was undertaken in dry soil conditions (unless an approved DMP authorises otherwise). 2. Use the Plant, Vehicle and Equipment Hygiene Checklist to check that all machinery and vehicles are clean on exit (i.e. free of soil and vegetation).

Table 3: Erosion and Sedimentation

<p>PRE WORKS</p> <p>1. The Contractor must develop, implement and maintain processes and procedures to ensure that:</p> <ul style="list-style-type: none">• The Contractor is responsive to and addresses incidents of erosion and sedimentation within and adjacent to the work areas.• Prevent water and wind soil erosion within and adjacent to the works areas.• Prevent the sedimentation and siltation of watercourses located within and adjacent to the works area.• Ensure that sedimentation and siltation of drainage lines is avoided, minimised and mitigated.• Ensure that loose surfaces and recently cleared areas are protected from wind and soil erosion.• Minimise exposed soil working surfaces or protect them from stormwater erosion.• Ensure material such as gravel, crushed rock and excavated material is stockpiled away from drainage paths and covered to prevent erosion.• Ensure that water quality monitoring is undertaken when turbidity and sedimentation is an issue.
<p>DURING WORKS</p> <p>1. Implement, monitor and adhere to the sedimentation and erosion processes developed to address the requirements in the pre-works.</p>
<p>POST WORKS</p> <p>1. If required, the Contractor must continue to monitor water quality until the turbidity/sedimentation dissipates.</p> <p>2. The Contractor must ensure that disturbed areas are stabilised as soon as is practicable after construction activities are completed.</p>

Table 4: Fauna

<p>PRE WORKS</p> <ol style="list-style-type: none">1. The Contractor must ensure that fauna management requirements are communicated to the crew undertaking the clearing works during the induction and pre-start meeting.2. Where active nests, burrows or dens are identified, works must not proceed until the Contractor obtains the Superintendents approval of the management of active nests, burrows or dens adheres to the Superintendents advice.
<p>DURING WORKS</p> <ol style="list-style-type: none">1. The Contractor must undertake the clearing in the following manner to allow fauna to move out of the clearing area;<ol style="list-style-type: none">i. Prior to the clearing activities commencing, use machinery to tap large trees with habitat hollows to encourage any animals evacuate.ii. Undertake the clearing in one direction and towards areas of native vegetation to allow the animals to escape to adjacent habitat.2. The Contractor must ensure that all onsite personnel undertake visual monitoring and are vigilant to the presence of fauna. Any sightings of fauna, including injury or fatality, must be reported as an Environmental Incident.3. The Contractor must ensure that;<ol style="list-style-type: none">i. No pets, traps or firearms are brought into the project area.ii. Fauna are not fediii. Fauna are not intentionally harmed or killediv. Fauna that venture into the work area are encouraged to leave in a manner that does not harm the animal or operator (loud noise, slowly approaching in a vehicle etc.)4. The Contractor must ensure that in the event that sick, injured or orphaned native wildlife are located on the project site, the WILDCARE Helpline ((08) 9474 9055) will be contacted for assistance. The Contractor must maintain records of any animal taken to a wildlife carer.
<p>POST WORKS</p> <ol style="list-style-type: none">1. The Contractor must provide any records of fauna impact to the Superintendent.

Table 5: Machinery and Vehicle Management

<p>PRE WORKS</p> <ol style="list-style-type: none"> 1. The Contractor must ensure that all areas associated with the storage, parking, servicing, wash down and refuelling of all vehicles, plant and machinery is located within the Limits of Clearing and approved by the Superintendent. 2. The Contractor must ensure that all vehicles, machinery and plant are clean on entry (i.e. free of all soil and vegetation material) and comply with the requirements of 204.B.32. 3. The Contractor must ensure that vehicle servicing and refuelling will be undertaken at designated areas approved by the Superintendent. 4. The Contractor must ensure that all staff suitably qualified and competent to undertake works, especially refuelling activities.
<p>DURING WORKS</p> <ol style="list-style-type: none"> 1. The Contractor must maintain records of checking all vehicles, machinery and plant are clean on entry.
<p>POST WORKS</p>

Table 6: Mulch and Topsoil Management

<p>PRE WORKS</p> <p>The Contractor must ensure that the movement of soil and vegetation is only undertaken in dry conditions unless otherwise approved and / or directed by the Superintendent.</p> <p>The Contractor must ensure that poor quality topsoil and mulched vegetation does not contaminate the good quality topsoil and vegetation.</p>
<p>DURING WORKS</p> <ol style="list-style-type: none"> 1. The Contractor must ensure that all machinery used in the removal of weed-infested topsoil must be cleaned down before and between operations to prevent the introduction and spread of weeds. 2. The Contractor must ensure the movement of large equipment over topsoil materials is avoided to minimise compaction. 3. The Contractor must ensure that Dieback and weed infected topsoil and mulch vegetation must be handled separately to minimise the risk of spreading dieback and weed species across the site and stockpiles. 4. The Contractor must ensure that stockpiling operations must occur in a manner to ensure that the properties of the topsoil are not degraded and the topsoil made unsuitable for use in revegetation.
<p>POST WORKS</p>

Table 7: Pegging and Flagging

<p>PRE WORKS</p> <ol style="list-style-type: none"> 1. Pegging must be done in accordance with the requirements detailed in Specification 301. 2. The Contractor must clearly communicate, either at the pre-start meeting or equivalent, to the crew undertaking the clearing works, through clear maps and other additional means, what the Pegging represents.
<p>DURING WORKS</p> <ol style="list-style-type: none"> 1. The Contractor must peg the Limits of Clearing by PINK flagging tape. 2. The Contractor peg/demarcate vegetation proposed to be retained is demarcated by WHITE flagging tape. 3. The Contractor must ensure that the vegetation demarcated with PINK and WHITE flagging tape is consistent with the approved clearing areas.
<p>POST WORKS</p> <ol style="list-style-type: none"> 1. The Contractor remove and dispose of appropriately any demarcation, pegging or flagging once project works are completed.

Table 8: Water Drainage

<p>PRE WORKS</p> <ol style="list-style-type: none"> 1. Use pollution control and containment strategies for project activities in Public Drinking Water Source Areas (PDWSAs) / Underground Water Pollution Control Areas (UWPCAs) and liaise with the DWER where necessary
<p>DURING WORKS</p> <ol style="list-style-type: none"> 1. Existing natural drainage paths and channels along the road or the vicinity of the project area will not be unnecessarily blocked or restricted. 2. Temporary drainage systems may be installed to carry surface water away from the areas where excavation and foundation construction work is taking place or from any other area where the accumulation of water could cause delay or damage to the work. 3. Maintain these drainage systems in proper working order at all times. 4. Runoff from disturbed areas must be managed to minimise adverse impacts on surrounding vegetation, watercourses and properties. 5. Booms and silt fences must be used when working over or adjacent to areas of surface water in order to protect the quality of surface water from construction impacts.

POST WORKS

1. Water quality monitoring to be undertaken (if turbidity/ sedimentation is an issue).
2. Prior to backfilling the completed pipe work certify that the entire system is flushed clean and tested
3. Disturbed areas will be stabilised soon after construction activities are completed.
4. Culvert and drainage structures will be free of all grass, weeds, silt and debris

Table 9: Weed Management**PRE WORKS**

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

DURING WORKS

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

POST WORKS

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