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WESTERN AUSTRALIA

Clearing Assessment Report – CPS 818

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Bridge No. 0541 – Replacement
M037 – Collie Lake Road, Wagin.

September 2023

EOS: 825

D24#1344617

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Amendments

Report Compilation & Review	Name and Position	Document Revision	Date
Author:	[REDACTED] Environmental Officer	Draft v1	17/05/2022
Reviewer:	[REDACTED] Senior Environment Officer	Draft v1	08-Jun-2022
Reviewer:	[REDACTED] Senior Environment Officer	Rev 0	04/08/2022
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Author:	[REDACTED] Environment Officer	Rev 1	18/09/2023
Reviewer:	[REDACTED] Principal Environment Officer	Rev 1	19/09/2023

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 No. 0541 Replacement - M037 – Collie Lake King Road, Wagin

Proposal Purpose / Components:

Bridge No. 0541 is located on Collie Lake King Rd at SLK 171.14 over Collanilling Gully, approximately 15 km east of the Town of Wagin, in the Shire of Wagin. The Bridge spans 13.13 m in length, 9.79 m in width (9.22 m between kerbs), with a maximum height of 1.3 m. Headroom varies between 0.4 – 1.3 m.

The Scope of Works generally include:

- Site clearance to accommodate geotechnical investigation.
- Excavation and construction of a temporary sidetrack located south of existing structure. The sidetrack will be dual lane, 10 m wide (8 m sealed). Batter widths will vary.
- Demolition and removal of existing timber bridge structure.
- Construct concrete plank bridge.
- Embankment construction behind each wing wall.
- Permanent road construction.
- Spoon drain construction.
- Pavement works, etc.
- Environmental footprint to accommodate at least a 6m construction workspace from sidetrack toe batters and 10 m from the structure.

The proposed clearing undertaking using CPS 818 is:

The total clearing area is 0.6063 ha of degraded native vegetation.

The proposed temporary clearing undertaking using CPS 818 is:

Nil.

Proposal Location(s):

The Proposal area is located on M037 Collie Lake King Rd at 171.14 SLK over Collanilling Gully, approximately 15 km east of the Town of Wagin, in the Shire of Wagin.

- Latitude: -33.281176
- Longitude: 117.492423

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

2.2 Assessment Report Scope

The assessment area, as shown in Figure 2, is confined to a local area of 10km.

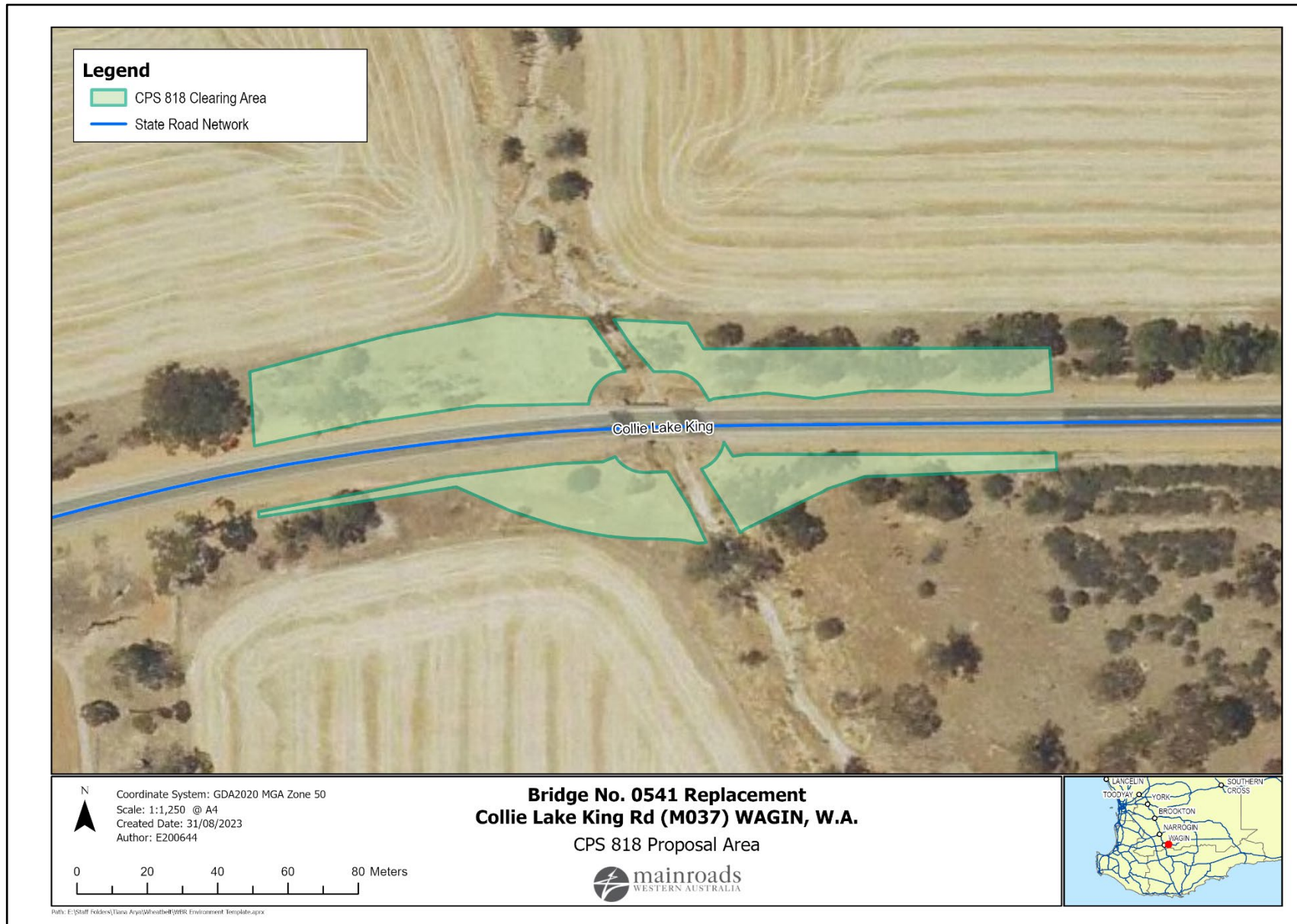


Figure 1. CPS 818 Proposal Area

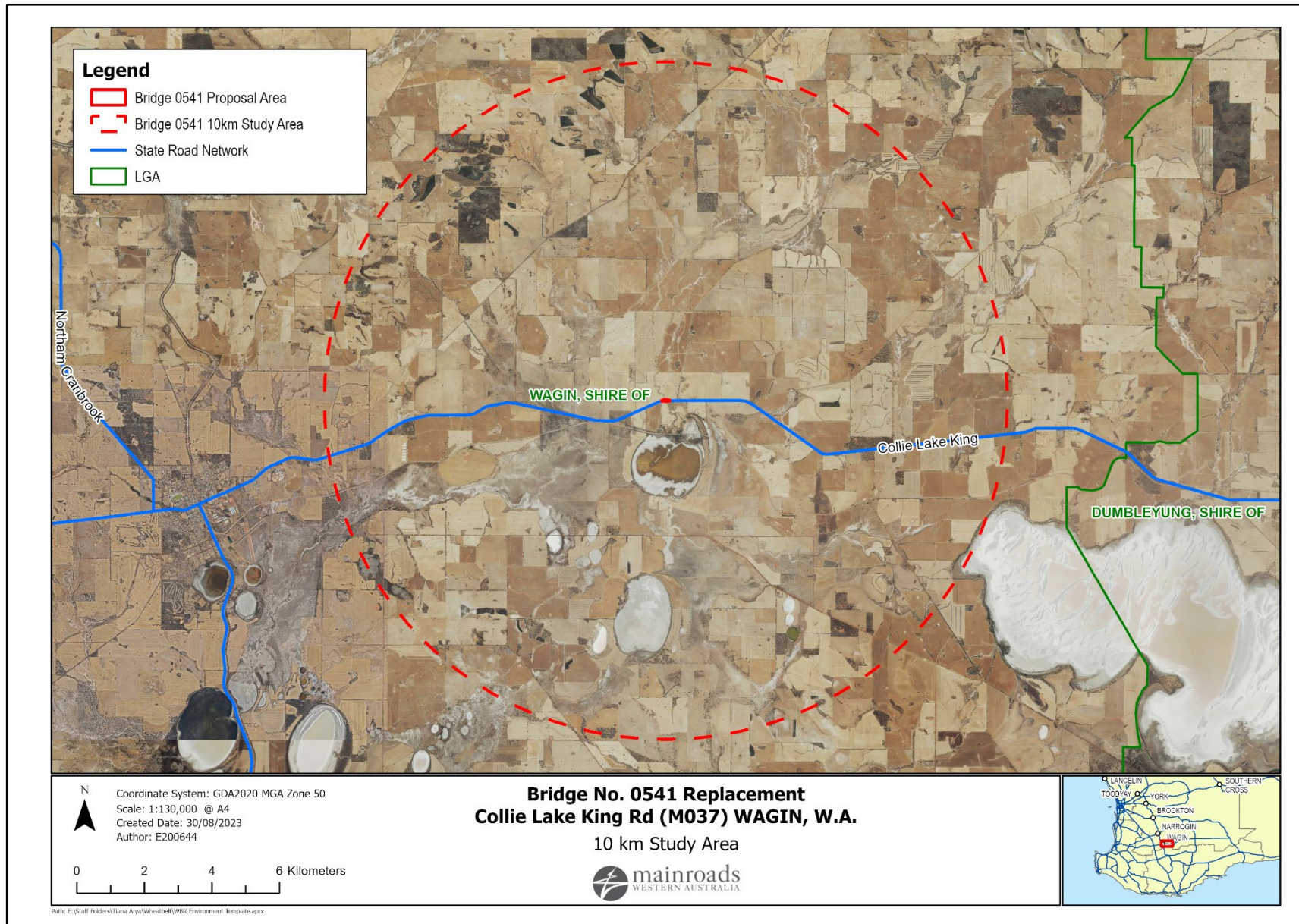


Figure 2. Assessment Area

2.3 Alternatives to Native Vegetation Clearing Considered During Proposal Development

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

- Preferentially locating Bridge 0541 in cleared pasture areas over the existing road reserve, however this was considered cost prohibitive e.g. due to cost of resumption of farmland and construction of completely new road rather than widening in existing alignment and premature redundancy of State road asset, lack of adequate funding, stakeholder engagement, resource requirements. Under this option, clearing would still be required for tie-ins to the existing road network.
- Do not upgrade Bridge 0541, 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.

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

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

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

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Design or Management Measure	Discussion and Justification
Alignment to one side of existing road	Due to the location of the road and the surrounding cleared farmland and the heavily degraded vegetation, constructing the temporary sidetrack on the south side of Collie Lake King Road was considered the best option to reduce the clearing footprint.
Alternative alignment to follow existing road (or) to preferentially locate within pasture or a degraded area.	Not applicable with this Proposal. The Proposal is to replace the existing bridge. Clearing will occur as a result of removal of the existing bridge and the construction of a temporary sidetrack.
Installation of kerbing.	Not applicable with this Proposal.
Simplification of design to reduce number of lanes and/or complexity of intersections	Not applicable with this Proposal.
Preferential use of existing cleared areas for access tracks, construction storage and stockpiling	The use of a pre-existing cleared area on the north side of Collie Lake King Road and the west side of Collanilling Gully was considered the preferable option for the laydown area. The use of the cleared area will reduce unnecessary clearing in the road reserve on the east side of Collanilling Gully.
Drainage modification	Not applicable with this Proposal.

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* (WA) (RIWI Act)
- *Aboriginal Heritage Act 1972* (WA)
- *Town Planning and Development Act 1928* (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 (DEC, December 2014)

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- Procedure: Native vegetation clearing permits (DWER, October 2021)
- 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 a biological survey of the bridge and its surrounds, including a desktop assessment, a detailed 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 survey covered 2.75 ha around Bridge 0541, approximately 100 m on each abutment side and 120 m wide. A desktop assessment was completed using a buffer of 20 km around the bridge.

Thirty eight flora taxa were recorded in the survey area, comprising 21 (55.3 %) introduced species and 17 (44.7 %) native species. None of the introduced species were identified as Declared Pests or 'Weeds of National Significance'. Additionally, no State-listed Threatened or Priority species were reported in the survey area. The desktop investigation identified one Priority 4 taxon (*Grevillea bracteosa* subsp. *bracteosa*) within the 20 km buffer area and considered the species 'Unlikely' to occur in the survey area due to the probable absence of suitable habitat.

Vegetation occupies approximately 1.39 ha of the survey area, with the remainder including cleared land (1.26 ha) and unvegetated land (0.1 ha). The vegetation condition was determined to be Degraded, with three vegetation types (EIAaAb, EIMbHg and CoMbHg) being identified within one Vegetation Association (1023) (Shepherd *et al.* 2002). The Vegetation in the area is predominantly described as medium woodland; dominated by an upper canopy (*Eucalyptus loxophleba* subsp. *loxophleba*, *E. wandoo*, *Casuarina obesa*), tall shrubs (*Acacia acuminata*), low shrubs (*Maireana brevifolia*, *Tecticornia*); with an under story of herbs and grasses (**Hypochaeris glabra*, **Ehrharta longiflora*, **Avena barbata*) species (asterisk indicates weed species). No Threatened or Priority Ecological Communities were identified within or near the survey area.

The basic fauna assessment recorded fauna that was generally common and not restricted to the survey area. The habitat condition was rated between Good and Completely degraded. The survey highlighted two habitat types that may support native fauna (Open Eucalypt Woodland and Drainage Line), covering 0.69 ha (25.33%) of the survey area. The identified habitat types are common in the Wheatbelt and not restricted to the survey area.

Seventeen vertebrate fauna species were recorded during the survey, including 16 birds and one mammal. 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 three DBCA significant species which may occur in the area due to the habitat type and location. These species included the Western Rosella (*Platycercus icterotis xanthogenys*) (Likely), Carnaby's Cockatoo (*Calyptorhynchus latirostris*) (Possible) and Peregrine Falcon (*Falco peregrinus*) (Possible).

The onsite assessment investigated potential breeding, night roosting and foraging habitats for the three black cockatoo species (Baudin's, Carnaby's and Forest Red-Tail) within the survey area. The survey detected no primary or secondary evidence of black cockatoos at the bridge or surrounding the survey area. No *Banksia*, *Hakea* or *Grevillea* species (known as Carnaby's Cockatoo foraging and common food items) were recorded as dominant within any of the survey area during the vegetation survey. Three diameter at breast height (DBH) (>500 mm) trees were identified during the survey, which did not contain any hollows. However, no DBH trees were located within the Proposal area. Large trees tended to be sparse, and most trees within the survey area were small

and lacked hollows. No confirmed or potential Carnaby's Cockatoo roosts or breeding areas are located within 20 km of Bridge 541.

3.2 Summary of dieback survey

Proposal activities will be undertaken in summer months when the watercourse will be dry, and standard hygiene requirements will be implemented (clean in/out).

Dieback is not considered to be of concern. While the Proposal is located below the 26th parallel and/or is an area that receives more than 400mm of annual rainfall per year, the movement of soil for the Proposal will occur during dry conditions and is not within or adjacent to DBCA Estate.

Given the above information, it was not deemed necessary to undertake a dieback assessment of the area.

4 VEGETATION DETAILS

4.1.1 Proposal Site Vegetation Description

Ecologia (2022) undertook a detailed flora and vegetation survey of Bridge 0541 Proposal area. Ecologia mapped, 0.61 ha (62 %) of vegetation consisting of three vegetation types within the 0.99 ha Proposal area. The remaining 0.38 ha (38 %) was mapped as cleared or unvegetated.

None of the three vegetation types assessed were considered to be of State significance based on the following criteria: (1) Presence of State-listed Threatened plant species, (2) presence of TECs and (3) land within a Conservation Estate.

According to Ecologia mapping of the 0.99 ha Proposal area the Map Codes were:

Map Code	Landform	Description	Area (ha) (%)	Total 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.	0.22 (22.7 %)	0.61 ha (61.7 %)
EIAaAb	Creek, Low hill, Midslope, Plain, Undulating plain	<i>Eucalyptus loxophleba</i> subsp. <i>loxophleba</i> , ± <i>Eucalyptus wandoo</i> tall open woodland; <i>Acacia acuminata</i> tall shrubland; <i>Avena barbata</i> , <i>Ehrharta longiflora</i> grassland.	0.34 (34.6 %)	
EIMbHg	Creek, Low hill, Plain	± <i>Eucalyptus longicornis</i> , ± <i>Eucalyptus loxophleba</i> subsp. <i>loxophleba</i> tall open woodland; <i>Maireana brevifolia</i> low shrubland; <i>Hypochaeris glabra</i> , <i>Avena barbata</i> , <i>Bromus diandrus</i> herb/grassland.	0.04 (4.5 %)	
Cleared	NA	NA	0.35 (35.1 %)	0.38 ha (38.3 %)
Unvegetated	NA	NA	0.03 (3.2 %)	

Ecologia mapped 0.61 ha (62 %) of vegetation in Degraded condition.

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

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

Pre-European Vegetation Association(s)	Clearing Description	Vegetation Condition	Comments
Vegetation Association 1023 and described as a Medium woodland; York Gum (<i>Eucalyptus loxophleba</i>), Wandoo (<i>E. wandoo</i>) and Salmon Gum (<i>E. salmonophloia</i>)	Clearing of up to 0.61 ha for bridge replacement and sidetrack construction within the Shire of Wagin.	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. 1023	Statewide	1,601,605	172,944	10.80	10.93
	IBRA Bioregion <i>Avon Wheatbelt</i>	1,522,680	165,192	10.85	10.45
	IBRA Sub-region <i>Katanning</i>	1,123,736	138,456	12.32	10.32
	Local Government Authority <i>Shire of Wagin</i>	170,425	22,060	12.94	5.30

5 ASSESSMENT AGAINST THE TEN CLEARING PRINCIPLES

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

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

The Proposal area is mapped as Beard Vegetation Association 1023, described as a Medium woodland; York Gum (*Eucalyptus loxophleba*), Wandoo (*E. wandoo*) and Salmon Gum (*E. salmonophloia*) (Government of Western Australia, 2019).

Ecologia (2022) mapped three vegetation types within the 0.99 ha Proposal area, namely:

Vegetation Type	Description
CoMbHg	$\pm$ <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.
EIAaAb	<i>Eucalyptus loxophleba</i> subsp. <i>loxophleba</i> , $\pm$ <i>Eucalyptus wandoo</i> tall open woodland; <i>Acacia acuminata</i> tall shrubland; <i>Avena barbata</i> , <i>Ehrharta longiflora</i> grassland.
EIMHg	$\pm$ <i>Eucalyptus longicornis</i> , $\pm$ <i>Eucalyptus loxophleba</i> subsp. <i>loxophleba</i> tall open woodland; <i>Maireana brevifolia</i> low shrubland; <i>Hypochaeris glabra</i> , <i>Avena barbata</i> , <i>Bromus diandrus</i> herb/grassland.

Approximately 0.61 ha of vegetation is proposed to be cleared within the Proposal area. The vegetation condition is mapped as Degraded, and the remaining 0.38 ha has been previously cleared or is unvegetated.

No Threatened or Priority Ecological Communities were identified within or near the survey area (Ecologia 2022).

Main Roads conducted a site inspection (D22#383132) on 8 April 2022 focusing its attention on the southern section of the Proposal area, as this is the area where the sidetrack is proposed to be constructed. The vegetation was described as mature trees with sporadic shrubs over weeds. The flora species recorded in this area included three tree species (*Eucalyptus occidentalis*, *E. loxophleba*, *E. wandoo*) and two shrubs (*Tecticornia* sp., and *Acacia* sp). In addition, the Proposal area is a highly modified and cleared landscape and the watercourse and road reserve vegetation do not provide ecological connectivity on a local or regional scale to any patches of intact vegetation. The Proposal area is a highly degraded and disturbed site with weed invasion of non-native grasses over the proposed sidetrack area. Several common weed species were in the Proposal area, however no Declared Plants or WONS were recorded.

Flora

Ecologia (2022) conducted a flora survey of Bridge 0541 in November 2021. The survey identified 38 taxa in the survey area, 21 (55 %) were introduced, and 17 (45 %) were native. The most dominant families in the survey area are Poaceae (12), Fabaceae (6), Chenopodiaceae (5), Asteraceae (3) and Myrtaceae (3). The most dominant genera being *Bromus* (3), *Eucalyptus* (3), *Acacia* (2), *Atriplex* (2), *Austrostipa* (2) and *Trifolium* (2). No state-listed Threatened or Priority flora taxa were identified during the site survey. Ecologia considered that no Threatened or Priority listed flora taxa were deemed likely or possible to occur in the wider survey area.

Fauna

Ecologia's desktop survey identified six Threatened species (two birds and four mammals), eight Migratory birds, one Specially Protected bird and six Priority species (three birds and three mammals) in the 10km Study area. Ecologia recorded 17 vertebrate fauna species during the field survey, including 16 bird and one mammal species. None were identified as Threatened species, specially protected or Priority listed species, under the BC Act. The post-survey 'likelihood of occurrence' assessment determined that three species were either likely or possible to occur in the Bridge 541 survey area. These species are further discussed below:

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Species	Likelihood	Habitat and distribution	Comments
Western Rosella (<i>Platycercus icterotis xanthogenys</i>) (MI)	Likely	Eucalypt and sheoak forests and woodlands. Marri, wandoo, salmon gum, flooded gum and York gum provide suitable hollows for nesting.	Recorded at Wagin opportunistically during survey. Species may overfly and utilise Open Woodland habitat at Bridge 541. Habitat represents foraging habitat only, due to general absence of tree hollows.
Carnaby's Cockatoo (<i>Calyptorhynchus latirostris</i>) (EN)	Possible	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.	Species may possibly occur. Habitat at Bridge 541 may represent low quality foraging habitat only, given no DBH trees are present in the Proposal area to support nesting or roosting, there are no confirmed or potential roosts or breeding sites located within 20 km of Bridge 541 and there are only two historical records of Carnaby's Cockatoo within a 10 km radius. Furthermore, EPA (2019) Guidance indicates the proposal area occurs within the former (pre-1987) distribution of the species. Based on the above, and noting the limited foraging species present, the Proposal area is unlikely to constitute significant Carnaby's Cockatoo habitat.
Peregrine Falcon (<i>Falco peregrinus</i>) (OS)	Possible	Occurs near cliffs along coasts, rivers and ranges, and around wooded watercourses and lakes.	May overfly and utilise habitat at the Bridge.

Following the assessment by Ecologia of the various vegetation types, soil units, and landforms associated with the Proposal area, four broad fauna habitat types were identified: Open Eucalypt Woodland (0.13 ha 13.2%), Revegetation (0.01 ha, 0.08%), Scattered Trees over Cleared Land (0.36 ha, 36.0%) and Drainage Line (0.15 ha, 15%). The remainder of the survey area was mapped as Cleared land (0.35 ha, 35.1%), which is not considered a fauna habitat type.

The Proposal area predominantly encompasses land cleared for agricultural purposes and remnant roadside vegetation. A small corner in the Proposal area contains planted shrubs which may provide shelter and foraging opportunities for birds and reptiles. Condition ratings at habitat assessment sites ranged from Completely degraded to Good, with clearing and weed infestations contributing to lower condition ratings.

No DBH trees were identified during in the Proposal area and no confirmed or potential Carnaby's Cockatoo roosts or breeding areas are located within 20 km of Bridge 541.

While it is noted there is limited vegetation in the 10 km assessment area and only 10.80 % of Vegetation Association 1023 remaining, a remnant vegetation patch lies 1.09 km to the west of the Proposal area and consists of approximately 45.7959 ha.

The Proposal area is adjacent to cleared land for agriculture with a high ratio of introduced species compared to native species (over half of the species (55 %) were identified as introduced and less than half identified as native (45 %). The proposed clearing of a narrow, linear area of native vegetation that does not contain any conservation significant flora, communities or fauna habitat, is not likely to represent a significant remnant of native vegetation.

According to the DWER GIS layer, the closest Environmentally Sensitive Area is located approximately 9.5km south east of the Proposal Area (Dumbleyung Lake Nature Reserve) and is not expected to be impacted by the Bridge works.

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Given the above and the small amount of clearing proposed (up to 0.61 ha), the Proposal **is not likely to be at variance** to this Clearing Principle.

Methodology

Biological Survey (Ecologia, 2022)

DBCA shapefiles

DWER shapefiles

EPA (2016, 2020)

Main Roads Site Inspection (April 2022)

Main Roads GIS Shapefiles

(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

Ecologia (2022) identified 13 fauna species of conservation significance during their desktop assessment in a 20 km buffer area, including six threatened species (two birds and four mammals), eight Migratory birds, one Specially protected bird and six Priority species (three birds and three mammals). Following the desktop survey and habitat assessment, a 'likelihood of occurrence' assessment determined three species were either likely or possible to occur in the Proposal area:

Species	Likelihood	Habitat and distribution	Comments
Western Rosella (<i>Platycercus icterotis xanthogenys</i>) (MI)	Likely	Eucalypt and sheoak forests and woodlands. Marri, wandoo, salmon gum, flooded gum and York gum provide suitable hollows for nesting.	Recorded at Wagin opportunistically during survey. Species may overfly and utilise Open Woodland habitat at Bridge 541. Habitat represents foraging habitat only, due to general absence of tree hollows.
Carnaby's Cockatoo (<i>Calyptrorhynchus latirostris</i>) (EN)	Possible	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.	Species may possibly occur. Habitat at Bridge 541 may represent low quality foraging habitat only, given no DBH trees are present in the Proposal area to support nesting or roosting, there are no confirmed or potential roosts or breeding sites located within 20 km of Bridge 541 and there are only two historical records of Carnaby's Cockatoo within a 10 km radius. Furthermore, EPA (2019) Guidance indicates the proposal area occurs within the former (pre-1987) distribution of the species. Based on the above, and noting the limited foraging species present, the Proposal area is unlikely to constitute significant Carnaby's Cockatoo habitat.
Peregrine Falcon (<i>Falco peregrinus</i>) (OS)	Possible	Occurs near cliffs along coasts, rivers and ranges, and around wooded watercourses and lakes.	May overfly and utilise habitat at the Bridge.

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The fauna assessment of Bridge 541 recorded 17 vertebrate fauna species during the survey including 16 birds and one mammal. No Threatened (BC Act), Specially Protected or Priority listed species were recorded during the survey.

Ecologia (2022) recorded four broad fauna habitat types in the Proposal area (Open eucalypt woodland, Drainage Line, Revegetation and Scattered Trees Over cleared land). The habitat types may provide different microhabitats and conditions for surrounding fauna species in the area. However, the Proposal area does not provide any linkage between habitats.

The habitat condition rating of the Proposal area ranged from Completely degraded to Good, with clearing and weed infestations contributing to lower condition ratings. A small corner of the Proposal area contains planted shrubs which may provide shelter and foraging opportunities for birds and reptiles.

Type	Extent in survey area (ha)	Habitat description
Open Eucalypt Woodland	0.13 (13.2%)	Numerous microhabitats are present within this habitat type which may provide foraging opportunities and refugia for ground dwelling species. Tree hollows, woody debris and leaf litter provide niches which may be occupied by invertebrates, birds, mammals and reptiles. Eucalypts and Allocasuarina provide hollows and foraging opportunities for arboreal mammals, lizards and birds including black cockatoos and phascogales.
Drainage Line	0.15 (15.0%)	This habitat supports drainage lines with surface water and banks with Tecticornia spp. and grassy weeds. Ducks and other waterfowl may intermittently visit this habitat type when inundated.
Revegetation	0.01 (0.8%)	Revegetated land. Provides few niches for fauna to occupy.
Scattered Trees Over Cleared Land	0.36 (36.0%)	Isolated trees over a cleared understory of grassy weeds. Few microhabitats are present within this habitat type which is generally not conducive for native fauna. Tree hollows, woody debris and leaf litter provide niches which may be occupied by invertebrates, birds, mammals and reptiles. Eucalypts occasionally provide hollows and foraging opportunities for arboreal mammals and birds.
Cleared (road/verge/other)	0.35 (35.1%)	Road and verge, including land cleared for infrastructure or other purposes which is highly disturbed and does not provide habitat for fauna species.

Ecologia conducted a black cockatoo assessment of the Proposal area. No DBH trees were identified during the survey of the Proposal area. Ecologia further reported that large trees tended to be sparse, and most trees within the survey area are small and lack hollows. In addition, Ecologia verified there were no confirmed or potential Carnaby's cockatoo roosts or breeding areas located within 20 km of Bridge 541.

As the proposed clearing area is adjacent to the existing road, linear in nature and the size of the clearing area (0.61 ha), it is unlikely that any fauna habitat values will be significantly impacted, particularly considering the proximity of the bridge and the nature of the surrounding habitats (cleared farmland).

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 fauna. The proposal **is not likely to be at variance** to this Clearing Principle.

Methodology

Biological Survey (Ecologia, 2022)

Main Roads Site Inspection (April 2022)

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(c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.**Proposal is not at variance to this Principle**

Ecologia (2022) did not identify any Threatened flora following online database searches within the 20 km Study area.

Further, Ecologia did not record any Threatened flora during the field survey.

Therefore, the proposal **is not at variance** with this Clearing Principle.

Methodology

Biological Survey (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. Ecologia reported no State (DBCA) listed TECs were recorded within the 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 species in the Proposal area are not representative of the 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).
Vegetation in Degraded to Good condition but retains important habitat features.	Condition	65% of the Proposal area was mapped as Degraded condition, with 35% being mapped as cleared or unvegetated land.
Mature trees are present with at least 5 trees per 0.5 ha.	Patch size	The presence of mature trees was less than the threshold, with large areas of the roadside being previously cleared. In addition, the Proposal area does not provide any connectivity to other remnant vegetation within the surrounding area. Refer to image in Clearing Principle (e)

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

Methodology

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

Clearing up to 0.61 ha is proposed within a 0.99 ha Proposal area and is mapped as containing pre-European vegetation association 1023 described as a Medium woodland: York Gum (*Eucalyptus loxophleba*), Wandoo (*E. wandoo*) and Salmon Gum (*E. salmonophloia*) (Table 2).

The vegetation association is below the 30% threshold at all levels (10.80 %) (Table 3) and has been mapped by Ecologia in Degraded condition, primarily from invasive weed species and grasses.

Ecologia (2022) mapped the condition of the surrounding vegetation as Completely degraded to Degraded, with most of the remnant vegetation within the Proposal area being within road verges, or Scattered Trees Over Cleared Land (isolated trees over a cleared understory of grassy weeds). Few microhabitats are present within this habitat type which is generally not conducive for native fauna. In addition, over half of the species (55 %) were identified as introduced and less than half identified as native (45 %).

According to DAFWA, the 10 km study assessment area surrounding the Proposal area suggests there is approximately 3,335 ha of mapped remnant vegetation remaining. The closest remnant vegetation patch lies 1.09 km to the west of the Proposal area, approximately 45.7959 ha in size.

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

Pre-European Vegetation Association(s)	Clearing Description	Vegetation Condition	Comments
Vegetation Association 1023 and described as a Medium woodland; York Gum (<i>Eucalyptus loxophleba</i>), Wandoo (<i>E. wandoo</i>) and Salmon Gum (<i>E. salmonophloia</i>)	Clearing of up to 0.61 ha for bridge replacement and sidetrack construction within the Shire of Wagin.	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. 1023	Statewide	1,601,605	172,944	10.80	10.93
	IBRA Bioregion <i>Avon Wheatbelt</i>	1,522,680	165,192	10.85	10.45
	IBRA Sub-region <i>Katanning</i>	1,123,736	138,456	12.32	10.32
	Local Government Authority <i>Shire of Wagin</i>	170,425	22,060	12.94	5.30

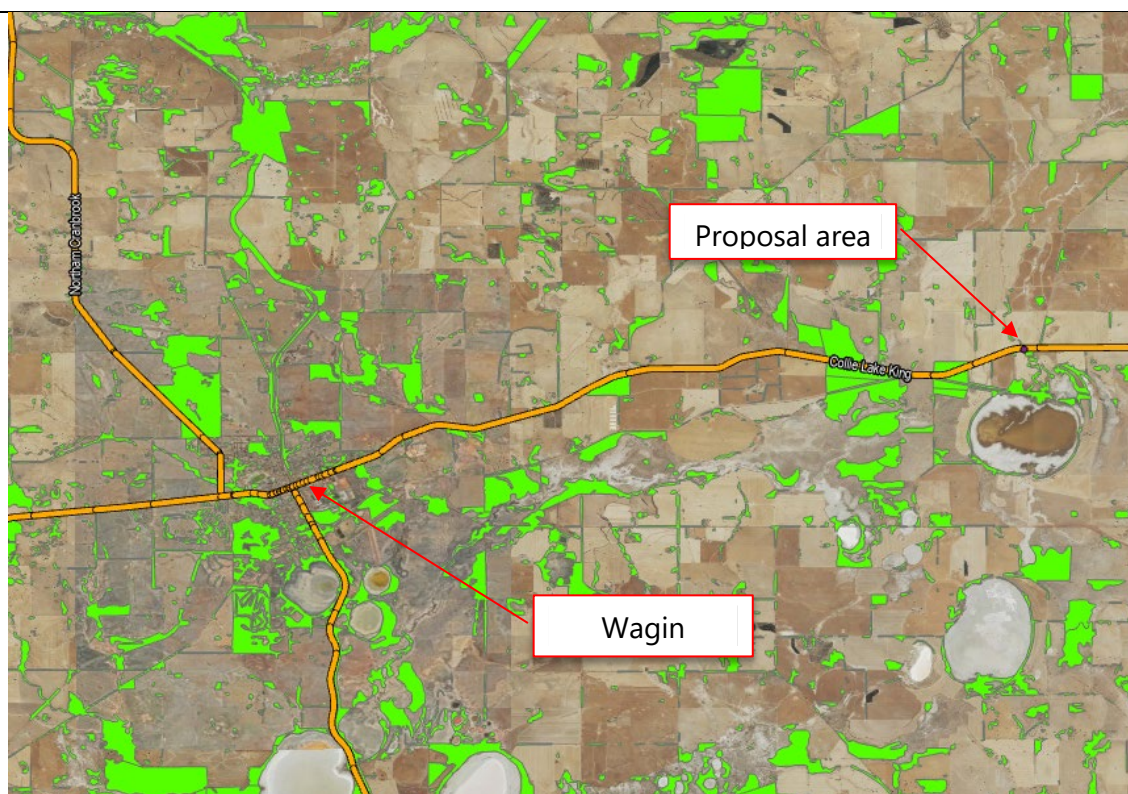


Image: Map depicts location of Proposal area in relation to Wagin, including surrounding remnant vegetation (green)

While it is noted there is limited vegetation in the 10 km assessment area and only 10.80 % of Vegetation Association 1023 remaining, a remnant vegetation patch lies 1.09 km to the west of the Proposal area and consists of approximately 45.7959 ha. The proposed clearing area is adjacent to cleared land for agriculture, has a high ratio of introduced species compared to native species (over half of the species (55 %) were identified as introduced and less than half identified as native (45 %); and has limited connectivity to other native vegetation remnants in the local area.

The proposed clearing of a narrow, linear area of native vegetation that does not contain any conservation significant flora, communities or fauna habitat, is not likely to represent a significant remnant of native vegetation.

Previous granted clearing permits where the application area supported vegetation that retained less than 30% of its extent but was not considered to be a significant remnant by DWER area as follows:

- CPS 7978 – Approximately 10 ha of vegetation in Good to Degraded condition was not considered to be a significant remnant as the majority of the application area was in a degraded condition.
- CPS 6851 – Approximately 5 ha of vegetation in Degraded to Completed degraded condition in a linear shape was not considered to be a significant remnant.
- CPS 8025 – Clearing area does not include flora or communities of significance or comprise significant habitat for fauna, then the application area is unlikely to be significant as a remnant of native vegetation in an area that has been extensively cleared.

Based on the above, the proposed clearing does not likely represent a significant remnant of native vegetation given its degraded condition, with little to no native understory and limited connectivity to other native vegetation remnants. The Proposal is **not likely to be at variance** to this Clearing Principle.

Methodology

Biological Survey (Ecologia, 2022)

EPA (2016)

Government of Western Australia (2022)

Shepherd (2009)

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(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**

Bridge 0541 crosses Collanilling Gully, which is mapped as a minor non-perennial watercourse.

A review of aerial imagery and the Main Roads WA IRIS Reporting Centre indicates that there is no native vegetation within the watercourse and only introduced pastoral grasses present.

Ecologia recorded three vegetation types (CoMbHg, ElAaAb and ElMbHg) within the Proposal area. Each vegetation type is recognised as "Tall open woodland". The dominant canopy species in all three vegetation types consisted of *Casuarina obesa*, *Eucalyptus longicornis*, *Eucalyptus loxophleba* subsp. *loxophleba*, and *Eucalyptus wandoo*. Each species is common throughout the Wheatbelt and extends beyond the watercourses. Therefore, the vegetation is not considered to constitute riparian vegetation in association with the watercourse as it remains adjacent to the watercourse as a result of farm clearing practices.

Based on the above information provided by Ecologia, and the habitat which the canopy species commonly inhabit, the clearing **is not likely to be at variance** to this Clearing Principle.

Methodology

Ecologia (2022)

DWER and DBCA shapefiles

Main Roads GIS Databases:

Aerial Imagery

Main Roads IRIS Reporting Centre

(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**

Ecologia (2022) reported that the Proposal area lies within the Cobline 2 subsystem (1734) (Northcote et al. 1960-1968). The Proposal area is described as Broad valley floors and alluvial plains with significant areas of saline wet soils (30-40%) and alkaline grey shallow sandy duplex soils, and grey deep sandy duplex soils.

The ASRIS Soil Map indicates a topsoil sand content of 60 to 80% sand, and a subsoil clay content of 60-80%.

DAFWA data advises that the Proposal area is in a moderate-high salinity risk or is presently saline (50-70%), potentially a result of secondary salinisation and the clearing of native vegetation for agriculture.

Wagin (15 km west of the Proposal area) is in a moderate rainfall area, receiving an annual average rainfall of 430.8 mm (Bureau of Meteorology Australia, 2022), occurring generally in the winter months.

DAFWA data advises that the potential for waterlogging in the Proposal area is reported to be high (>70%); water erosion is low (3-10%), and wind erosion is moderate (10-30%).

The ASRIS ASS Map indicates that there is a low probability of ASS occurrence within the Proposal area. Minimal excavation and limited (if any) dewatering will be required for the Proposal. Accordingly, ASS is unlikely to be a significant issue. An ASS Management Plan will be developed if predicted disturbance exceeds DWER trigger levels.

Given the small area of clearing (0.61 ha), the quantity of rainfall experienced by the Proposal area, the size of the waterway (minor), the low water and wind erosion levels, the existing moderate-high saline environment, works to be undertaken in the summer months, and minimal excavation, it is unlikely clearing the vegetation in the Proposal area will cause appreciable land degradation.

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

Methodology

Ecologia (2022)

ASRIS (Accessed 17-May-2022)

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Natural Resource Management SLIP Soil Systems (Accessed 17-May-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

GIS mapping indicates that the closest nature reserve (Gundaring Lake Nature Reserve (Class A)) is located approximately 1 km south of the Proposal area.

Given the distance between the Proposal area and this conservation reserve, and the limited ecological connectivity, the Proposal is highly unlikely to impact this Nature Reserve.

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

Methodology

ASRIS (Accessed 17-May-2022)

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

The Proposal area crosses Collanilling Gully, a mapped minor non-perennial watercourse.

There are no mapped Public Drinking Water Source Areas (PDWSA), Proclaimed Groundwater or Surface Water Areas proclaimed under the *Rights in Water and Irrigation Act 1914* (RIWI Act), or catchment proclaimed under the *Country Areas Water Supply Act 1947* (CAWS Act) within the 10 km Study area.

The works will involve minor excavation of the Collanilling Gully to remove the existing timber bridge structure and the construction of the concrete plank bridge, the spoon drainage system, embankment development and the temporary sidetrack (located south of the existing bridge structure).

The works are planned to occur in the summer months, reducing the rain generated runoff into Collanilling Gully. If the Collanilling Gully contains water, then appropriate silt curtains will be installed to minimise impacts outside the immediate disturbance area.

No surface water will be taken for this Proposal, and due to the size and nature of the works, it is unlikely that there will be a significant impact on the water quality of this area. Given the small scale of clearing and the unlikely need for dewatering or major drainage modifications, no deterioration of underground water level or quality is expected.

Given the above, it is unlikely that this proposal will cause deterioration in the quality of surface or underground water and **is not likely to be at variance** to this Clearing Principle.

Methodology

DWER and DBCA shapefiles

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

Proposed clearing is not at variance to this Principle

The Proposal area crosses Collanilling Gully. A sidetrack will be installed to allow traffic to bypass the (concrete plank) bridge construction.

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The Proposal area (15 km east of Wagin) is located in a moderate rainfall area, receiving 430.8 mm of average annual rainfall (Bureau of Meteorology Australia, 2020).

The ASRIS Soil Map indicates a topsoil sand content of 60 to 80% sand, and a subsoil clay content of 60-80%.

In accordance with DAFWA data shapefile, the Proposal area is located in a map unit that has a low flood risk (3-10%). DPIRD Soil Landscape Mapping describes the Proposal area as broad valley floors and alluvial plains with significant areas of saline wet soils (30-40%) as well as alkaline grey shallow sandy duplex soils and grey deep sandy duplex soils.

Given that the Proposal area occurs on soils with reasonable infiltration capacity, and the small amount of clearing (0.61 ha) proposed, this proposal is unlikely to cause, or exacerbate, the incidence or intensity of flooding and **is not at variance** to this Clearing Principle.

Methodology

ASRIS (Accessed 17-May-2022)

Beauro Of Meterology (Accessed 16-Apr-2022)

Natural Resource Management SLIP Soil Systems (Accessed 17-May-2022)

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 & OFFSETS

7.1 Offset Proposal

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

7.2 Revegetation and rehabilitation

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

8 STAKEHOLDER CONSULTATION

Main Roads is not required to undertake stakeholder consultation in accordance with CPS 818/16 Condition 8.

9 COMPLIANCE WITH CPS 818

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

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

Impact of Clearing	Yes/No or NA	Further Action Required
1. The CAR indicates that the clearing is 'At Variance' or 'May be at Variance' with one or more of the Clearing Principles. Where the clearing is at variance or may be at variance to Clearing Principle (f) and no other Clearing Principle, and the area of the proposed clearing is less than 0.5 hectares in size and the Clearing Principle (f) impacts only relate to: (i) a minor non-perennial watercourse(s); (ii) a wetland(s) classed as a multiple use management category wetland(s); and/or	No	No further action required.

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Impact of Clearing	Yes/No or NA	Further Action Required
(iii) a wetland that is not a defined wetland; the preparation of an Assessment Report, as required by condition 6(e), is not required.		
2. Clearing is at variance or may be at variance with Clearing Principle (g) land degradation, (i) surface or underground water quality or (j) the incidence of flooding.	No	No further action required.
3. The project involves clearing for temporary works (as defined by CPS 818).	No	No further action required.
4 a. Project is within Region that: - Has rainfall greater than 400mm and - Is South of the 26th parallel and - Works are in 'Other than dry conditions' and - Works have potential for uninfested areas to be impacted	No	Comply with the Dieback Management Process D20#56909. Proposal activities will be undertaken in summer months when the watercourse will be dry, and standard hygiene requirements will be implemented (clean in/out).
4b. Does the proposed works require clearing within or adjacent to DBCA estate in non-dry conditions?	No	No further action required.
5. Main Roads has been notified by DWER or an environmental specialist that the area to be cleared is susceptible to a pathogen other than dieback	No	No further action required.
6. The vegetation within the area to be cleared and/or the surrounding vegetation in a good or better condition and weeds likely to spread to and result in environmental harm to adjacent areas of native vegetation that are in good or better condition.	No	No further action required.

10 REFERENCES

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11 APPENDICES

Appendix	Title
Appendix 1	Supporting Photo Evidence
Appendix 2	Principal Environmental Management Requirements

Appendix 1: Supporting Photo Evidence



View of western portion of sidetrack location looking east (08-Apr-2022)



View of eastern portion of sidetrack location looking east (08-Apr-2022)

Principal Environmental Management Requirements (PEMR's)

Appendix 2: Principal Environmental Management Requirements (PEMR's)

Table 1: Clearing PEMR

STANDARD MANAGEMENT ACTIONS

STANDARD MANAGEMENT REQUIREMENTS
PRE WORKS 1. The Contractor must prepare, implement and maintain processes to ensure that the movement of all vehicles, plant and machinery does not occur outside of the Limits of Vegetation Clearing. This must include all turnaround areas. 2. The Contractor must minimise vegetation clearing and the area of disturbance on ground by utilising existing cleared area where possible.
DURING WORKS 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 works 3. The Contractor must undertake the clearing in accordance with the Fauna PEMR.
POST WORKS 1. NIL

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

STANDARD MANAGEMENT REQUIREMENTS
PRE WORKS 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).
DURING WORKS 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.
POST WORKS 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

PRE WORKS 1. The Contractor must develop, implement and maintain processes and procedures to ensure that: • The Contractor is responsive to and addresses incidents of erosion and sedimentation within and adjacent to the work areas. • Prevent water and wind soil erosion within and adjacent to the works areas. • Prevent the sedimentation and siltation of watercourses located within and adjacent to the works area. • Ensure that sedimentation and siltation of drainage lines due to the removal of riparian vegetation is avoided, minimised and mitigated. • Ensure that loose surfaces and recently cleared areas are protected from wind and soil erosion. • Minimise exposed soil working surfaces or protect them from stormwater erosion. • Ensure material such as gravel, crushed rock and excavated material is stockpiled away from drainage paths and covered to prevent erosion. • Ensure that water quality monitoring is undertaken when turbidity and sedimentation is an issue.
DURING WORKS 1. Implement, monitor and adhere to the sedimentation and erosion processes developed to address the requirements in the pre-works.
POST WORKS 1. If required, the Contractor must continue to monitor water quality until the turbidity/sedimentation dissipates. 2. The Contractor must ensure that disturbed areas are stabilised as soon as is practicable after construction activities are completed.

Table 4: Fauna

PRE WORKS 1. The Contractor must ensure that fauna management requirements are communicated to the crew undertaking the clearing works during the induction and pre-start meeting. 2. Where active nests, burrows or dens are identified, works must not proceed until the Contractor obtains the Superintendents approval of the management of active nests, burrows or dens adheres to the Superintendents advice.
DURING WORKS 1. The Contractor must undertake the clearing in the following manner to allow fauna to move out of the clearing area; i. Prior to the clearing activities commencing, use machinery to tap large trees with habitat hollows to encourage any animals evacuate. ii. Undertake the clearing in one direction and towards areas of native vegetation to allow the animals to escape to adjacent habitat. 2. The Contractor must ensure that all onsite personnel undertake visual monitoring and are vigilant to the presence of fauna. Any sightings of fauna, including injury or fatality, must be reported as an Environmental Incident. 3. The Contractor must ensure that; i. No pets, traps or firearms are brought into the project area. ii. Fauna are not fed iii. Fauna are not intentionally harmed or killed iv. Fauna that venture into the work area are encouraged to leave in a manner that does not harm the animal or operator (loud noise, slowly approaching in a vehicle etc.) 4. The Contractor must ensure that in the event that sick, injured or orphaned native wildlife are located on the project site, the WILDCARE Helpline ((08) 9474 9055) will be contacted for assistance. The Contractor must maintain records of any animal taken to a wildlife carer.
POST WORKS 1. The Contractor must provide any records of fauna impact to the Superintendent.

Table 5: Machinery and Vehicle Management

PRE WORKS 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.
DURING WORKS 1. The Contractor must maintain records of checking all vehicles, machinery and plant are clean on entry.
POST WORKS

Table 6: Mulch and Topsoil Management

PRE WORKS Contractor must ensure that the movement of soil and vegetation is only undertaken in conditions unless otherwise approved and / or directed by the Superintendent. Contractor must ensure that poor quality topsoil and mulched vegetation does not contaminate the good quality topsoil and vegetation.
DURING WORKS 1. The Contractor must ensure that all machinery used in the removal of weed-infested topsoil must be cleaned down before and between operations to prevent the introduction and spread of weeds. 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.
POST WORKS

Table 7: Pegging and Flagging

PRE WORKS 1. Pegging must be done in accordance with the requirements detailed in Specification 301. 2. The Contractor must clearly communicate, either at the pre-start meeting or equivalent, to the crew undertaking the clearing works, through clear maps and other additional means, what the Pegging represents.
DURING WORKS 1. The Contractor must peg the Limits of Clearing by PINK flagging tape. 2. The 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.
POST WORKS 1. The Contractor remove and dispose of appropriately any demarcation, pegging or flagging once project works are completed.

Table 8: Water Drainage

PRE WORKS 1. Use pollution control and containment strategies for project activities in Public Drinking Water Source Areas (PDWSAs) / Underground Water Pollution Control Areas (UWPCAs) and liaise with the DWER where necessary
DURING WORKS 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.