Clearing Assessment Report – CPS 818

We're working for Western Australia.

Bridge 15 Replacement and Road Realignment

February 2021

EOS 1655

D21#177477

Contents

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 proposal, the existing environment and an assessment of native vegetation clearing. This assessment provides an evaluation of the vegetation clearing impacts associated with the proposal using the ten Clearing Principles, and the strategies used to manage vegetation clearing.

2 SCOPE

2.1 Proposal Scope

Proposal Name: Albany Highway Bridge 15 Replacement and Road Realignment Straight Line Kilometres (SLK) 117.1-118.3.

Proposal Purpose / Components: Main Roads proposes to replace Bridge 15 and realign the road approach to Albany Highway. Bridge 15 is more than 90 years old and is located on a heavy haulage route. The proposed works will improve road user safety and include:

- demolition of Bridge 15
- construction of a new bridge immediately to the east of Bridge 15
- realignment and widening of the road approach and tie-ins to Albany Hwy.

The proposed clearing undertaking using CPS 818 is: Up to 1.66 ha of native vegetation clearing within a proposal area of 4.13 ha using CPS 818.

Proposal Location(s): The proposal area is located on Albany Highway from SLK 117.1-118.3 in the Shire of Boddington (Figure 1).

Coordinates
SLK 117.1: 116.587 -32.767 decimal degrees
SLK 118.3: 116.594 -32.776 decimal degrees

The following terms are used in this CAR:

Clearing area: This area represents the proposed native vegetation clearing area.

Proposal area: This area represents the maximum area within which the clearing area will be located. This envelope is slightly larger than the clearing area to allow for minor changes to design, and unexpected construction changes. This CAR includes an environmental values assessment of the proposal area.

2.2 Assessment Report Scope

The assessment area is confined to a local area radius of 20 km (Figure 2).

Figure 1. Proposal Area

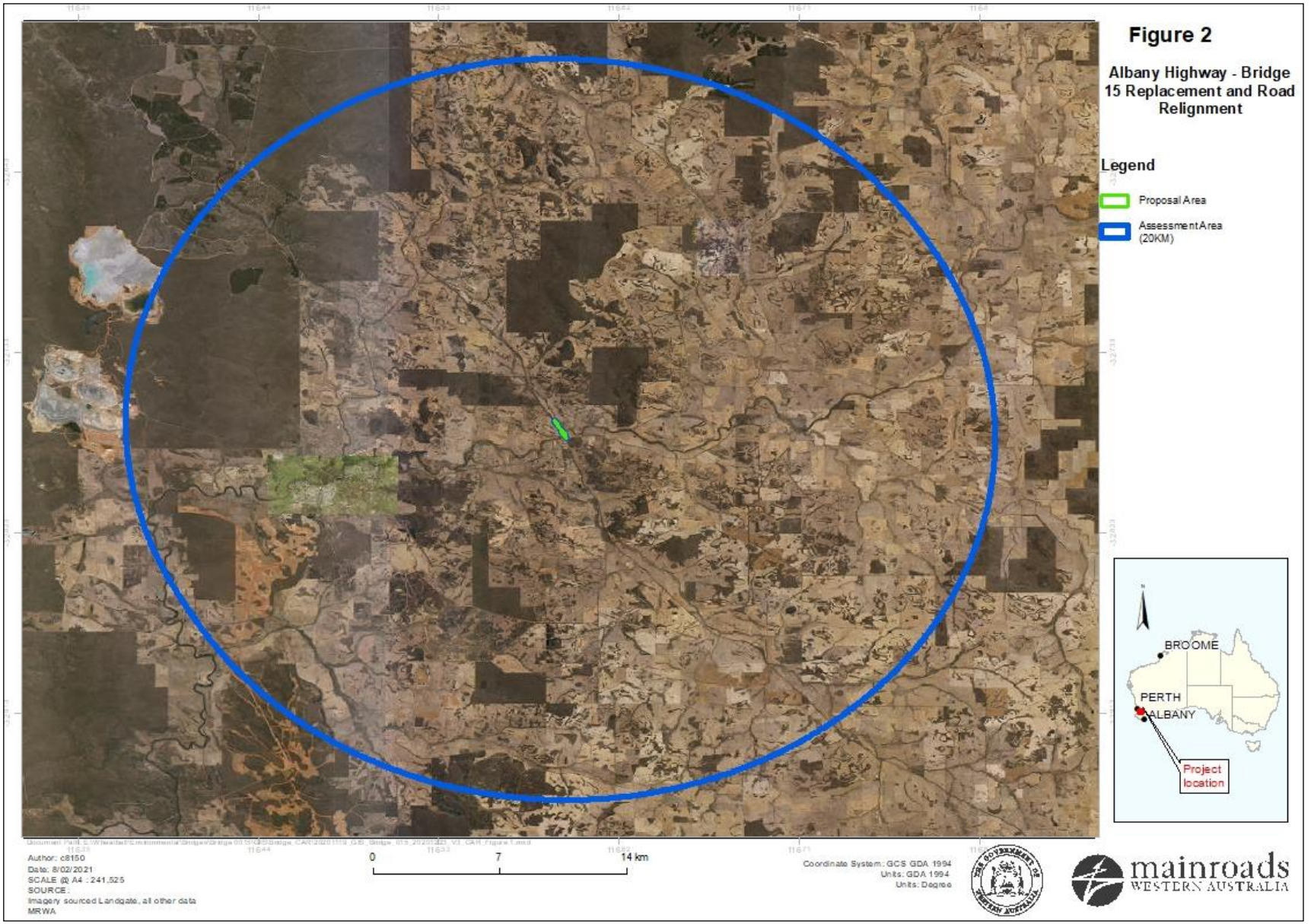

Figure 2. Proposal Assessment Area

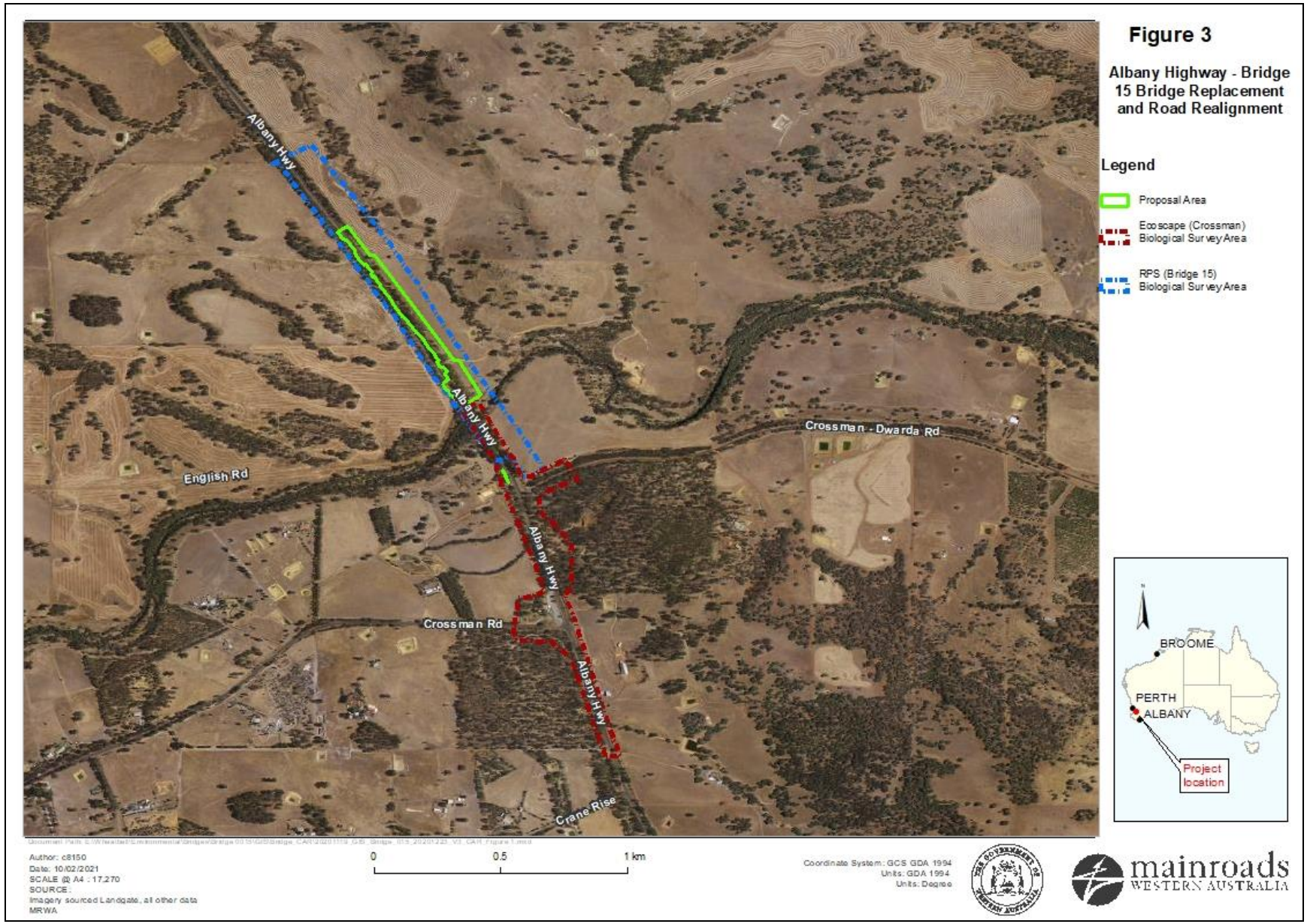

Figure 3: Biological Survey Study Areas and Proposal Area

2.3 Alternatives to clearing

Main Roads investigated a number of options to replace Bridge 15 on Albany Highway.

The baseline option considered replacing Bridge 15 on the existing alignment; however as the existing geometry of Albany Highway is sub-standard, the works would not meet current road design standards.

Locating the new bridge on the western side of Bridge 15 was ruled out, due to the close proximity of an existing resident house and road design compliance concerns.

The preferred option is to relocate the new bridge on the eastern side. This option minimises native vegetation clearing area, meets road design standards and has the least impact to existing surrounding infrastructure.

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

Table 1 provides the design and management measures implemented to avoid and minimise the proposal clearing impacts.

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

Design or Management Measure	Discussion and Justification
Steepen batter slopes	Batters were steepened where possible, in line with design standards, to minimise the clearing footprint.
Installation of safety barriers	The installation of safety barriers at the bridge and associated road approaches are proposed. Batter slopes behind the proposed barriers at the road approaches to the bridge, were steepened, reducing the clearing impact.
Alignment to one side of existing road	The bridge replacement was aligned to only impact vegetation to the east of the existing road.
Alternative alignment to follow existing road (or) to preferentially locate within pasture or a degraded areas	The baseline option considered replacing Bridge 15 on the existing alignment; however as the existing geometry of Albany Highway is sub-standard, the works would not meet current road design standards. The preferred option is to relocate the new bridge and associated road approaches to the east of Bridge 15. This option minimises native vegetation clearing area, meets road design standards and has the least impact to existing surrounding infrastructure (e.g. existing resident house).
Installation of kerbing	Kerbing has been considered and implemented in the design, where possible.
Preferential use of existing cleared areas for access tracks, construction storage and stockpiling	Additional vegetation clearing will be avoided as the site office, materials storage areas, construction vehicles/machinery and access tracks will be located on previously disturbed or cleared areas, where possible.
Drainage modification	Bridge and road drainage will be maintained and will be in keeping with the existing drainage.

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 Surveys

The proposal area is located on Albany Highway between SLK 117.12-118.3.

RPS completed a biological survey incorporating a detailed flora and vegetation survey, a level 1 fauna survey and a targeted Black Cockatoo survey in October 2019. This biological survey included the majority of the proposal area (SLK 117.12-118.17).

Ecoscape completed two biological surveys for the Crossman Intersection Upgrades project (Crossman). These biological surveys were conducted in September 2016 and January 2017 and slightly overlaps the proposal area. Crossman is located adjacent to the proposal area and includes the remainder of the proposal area (SLK 118-119).

Figure 3 shows the RPS 2019 and Ecoscape 2016 biological survey study areas.

Section 3.1.1 contains a summary of these biological surveys.

3.1.1 Summary of Biological Survey

RPS Survey

Key biological field survey findings:

- No conservation significant flora or vegetation
- Five structurally intact native vegetation associations and three highly modified/cleared mapping units
- Vegetation condition ranged from Good-Very Good throughout some of the remnant woodland vegetation, to Completely Degraded
- Five fauna habitat types
- Suitable foraging habitat for Carnaby's Cockatoo
- No signs of Black Cockatoo foraging activity
- Potential Black Cockatoo habitat trees, one of which contained a hollow suitable for breeding. No signs of breeding activity were observed
- Proposal area may provide habitat for Fork-tailed Swift and Red-tailed Phascogale.

Ecoscape Survey

Key biological field survey findings:

- No conservation significant flora or vegetation
- Suitable foraging habitat for Carnaby's Cockatoo.
- Potential Black Cockatoo habitat trees, although no evidence of use was observed.
- Carnaby's Cockatoo observed in the survey area.
- Proposal area may provide habitat for Chuditch and Red-tailed Phascogale.

3.2 Dieback Survey

Glevan Consulting conducted a Phytophthora dieback survey of the proposal area in November 2020.

3.2.1 Summary of Dieback Survey

No Phytophthora dieback infestations were observed and no protectable areas were identified during the assessment (Glevan Consulting, 2020).

As there are no protectable areas within the proposal area, there are no hygiene boundaries. Vehicles and machinery should still be clean when arriving on site to be free of weeds and seeds. After completion of work, area, vehicles and machinery should be cleaned in the proposal area prior to use in other project areas that may contain protectable vegetation (Glevan Consulting, 2020).

3.3 Black Cockatoo - Possible Breeding Hollow Survey

Tony Kirkby completed a field survey in September 2020 to assess ten possible Black Cockatoo breeding hollows identified during RPS' 2019 biological survey.

All hollows were inspected from ground level with binoculars for signs of chewing or wear at the hollow entrance indicating use by Black Cockatoos. Hollows were checked with a pole camera to confirm ground level survey results.

Refer to Section 3.3.1 for a summary of survey findings.

3.3.1 Summary of Black Cockatoo - Possible Breeding Hollow Survey

This field survey found that none of the hollows inspected were suitable for use as Black Cockatoo breeding hollows.

4 VEGETATION DETAILS

4.1.1 Proposal Site Vegetation Description

The proposal is located in the Avon Wheatbelt bioregion within the Shire of Boddington. Cleared agricultural land and patches of remnant native vegetation surround the proposal area.

Table 2 describes the vegetation types mapped for the expected clearing area within the proposal area.

Table 3 lists the vegetation condition mapped for the expected clearing area within the proposal area

For a full description of the existing vegetation, refer to the biological survey reports provided in Appendix 1, 2 and 3.

Table 2. Vegetation Types for Expected Clearing Area within Proposal Area

Mapping Unit	Description	Expected Clearing Area within Proposal Area (ha)
EwAh/DpHh[1]	*Eucalyptus wandoo* subsp. *wandoo* and *Allocasuarina huegeliana* Open Forest over *Xanthorrhoea preissii*, *Acacia nervosa* and *Allocasuarina humilis* Open Shrubland over *Dodonaea pinifolia*, *Hibbertia hypericoides*, *Bossiaea eriocarpa*, *Grevillea bipinnatifida* subsp. *bipinnatifida* and *Hibbertia commutata* Low Shrubland	0.18
EwEm/Xp[1]	*Eucalyptus wandoo* subsp. *wandoo* and *Eucalyptus marginata* Open Forest over *Acacia acuminata* and *Xanthorrhoea preissii* Tall Sparse Shrubland over **Ehrharta calycina*, **Bromus diandrus*, **Briza maxima* and **Avena barbata* Tussock Grassland	1.40
Ah/Le[1]	*Allocasuarina huegeliana* Low Forest with Isolated *Eucalyptus wandoo* subsp. *wandoo* and *Eucalyptus accedens* over *Leptospermum erubescens*, *Banksia sessilis* and *Xanthorrhoea preissii* Tall Shrubland to Scrub	0.08
	Total native vegetation	1.66

[1] Source: Biological Survey (RPS, 2020)
[2] Source: Biological Survey (Ecoscape, 2016)

Table 3: Vegetation Condition for Expected Clearing Area within Proposal Area

Vegetation Condition (EPA, 2016)	Expected Clearing Area (ha)	Expected Clearing Area (%)
Very Good to Good	0.07	4.22
Good	0.02	1.20
Good to Degraded	1.48	89.16
Degraded	0.09	5.42
Total	**1.66**	**100**

Tables 4 and 5 provide details of the pre-European vegetation associations within the proposal area and the remaining extents of these associations. Vegetation association 4 has less than 30% remaining on a statewide, IBRA bioregion and local government level.

Table 4. Pre-European Vegetation Associations

Pre-European Vegetation Association(s)	Clearing Description	Comments
Vegetation Association 4 described as a Medium woodland, marri and wandoo	Native vegetation clearing of up to 1.66 ha for the purpose of replacing Bridge 15 and realigning the road approach to Albany Highway.	Vegetation description from biological surveys (RPS, 2020; Ecoscape, 2016)

Table 5. Pre-European Vegetation Representation

Pre-European Vegetation Association	Scale	Pre–European (ha)	Current Extent (ha)	% Remaining	% Remaining in DBCA reserves
Veg Assoc No. 4	**Statewide**	1,054,279.89	284,102.41	26.95	6.43
	IBRA Bioregion (Jarrah Forest)	1,022,712.69	277,087.18	27.09	6.45
	IBRA Sub-region (Northern Jarrah Forest)	614,200.82	197,903.81	32.22	9.85
	Local Government Authority Shire of Boddington	29,427.01	6,729.72	22.87	0.39

5 ASSESSMENT AGAINST THE TEN CLEARING PRINCIPLES

In assessing whether the proposal's proposed clearing is likely to have a significant impact on the environment, the proposal was assessed against the ten Clearing Principles (Environmental Protection Act 1986, Schedule 5).

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

The proposed native vegetation clearing under CPS 818 is not at or not likely to be at variance with the ten Clearing Principles.

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

Comments	Proposed clearing is not likely to be at variance to this Principle
	Flora and Vegetation The proposed native vegetation clearing amounts to 1.66 ha within a proposal area of 4.13 ha. Approximately 55% of the proposal area is already cleared. The vegetation condition of the native vegetation within the proposal area is almost entirely degraded with only 5 % of the vegetation being in Good or better condition (see Table 3). The proposal area comprises four native vegetation types: • *Eucalyptus wandoo* subsp. *wandoo* and *Allocasuarina huegeliana* Open Forest • *Eucalyptus wandoo* subsp. wandoo and *Eucalyptus marginata* Open Forest • *Allocasuarina huegeliana* Low Forest. <u>Bridge 15 Biological Survey Area</u> A total of 81 vascular flora taxa were recorded, of which 68 (84%) were native species, 10 (12%) were naturalised alien (weed) species, and three were planted native Australian, but non-endemic species (RPS, 2020). No Threatened Flora (TF) species listed under the BC Act or the EPBC Act and no Priority Flora (PF) species listed by the Department of Biodiversity, Conservation and Attractions (DBCA) were recorded (RPS, 2020) and the 'residual likelihood of occurrence' for these species is negligible (RPS, 2020). No state-listed Priority Ecological Communities (PECs), or Threatened Ecological Communities (TECs) were recorded (RPS, 2020). <u>Crossman Biological Survey Area</u> A total of 178 vascular flora species were identified (not including planted non-native tree species) of which 61 (34.27%) flora species were introduced, including two Declared Pest plants (Ecoscape, 2016; 2017). No TF species listed under the BC Act or the EPBC Act and no PF species listed by the DBCA were identified, and none were considered likely to occur (Ecoscape, 2016). No state-listed Priority Ecological Communities (PECs), or Threatened Ecological Communities (TECs) were recorded (Ecoscape, 2016). **Fauna** <u>Bridge 15 Survey Area</u> A 'listed fauna' desktop assessment identified 15 conservation significant species that may occur within this survey area (RPS, 2000). No conservation significant fauna species were observed during RPS' 2019 survey. A 'residual likelihood of occurrence' assessment determined three avian threatened fauna species and one migratory bird species identified under the EPBC Act and the BC Act may have some likelihood of occurrence (RPS, 2020). These species are Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*), Baudin's Cockatoo (*Calyptorhynchus baudinii*), Carnaby's Cockatoo (*Calyptorhynchus latirostris*), and the Fork-tailed Swift (*Apus pacificus*).

	Crossman Survey Area A 'listed fauna' desktop assessment identified 19 conservation significant species that may occur within this survey area (Ecoscape, 2016). Sixteen terrestrial fauna species were recorded during Ecoscape's 2016 survey, one of conservation significance, Carnaby's Cockatoo. A likelihood assessment identified two other Commonwealth-listed species; Red-tailed Phascogale (*Phascogale calura*) and Chuditch (*Dasyurus geoffroii*) potentially occurring in this survey area. Two State-listed Priority species were also deemed as potentially occurring; Western False Pipistrelle (*Falsistrellus mackenziei*) and the sub species South-western Brush-tailed Phascogale (*Phascogale tapoatafa wambenger*). Summary Given the proposed clearing area is minor in scale and nature, with only 5 % of vegetation in Good or better condition, with no recorded conservation significant flora or ecological communities, the proposed clearing is not likely to be at variance with Principle (a).
Methodology	DBCA shapefiles Main Roads GIS Shapefiles Biological Survey reports (RPS, 2020; Ecoscape 2016, 2017) NatureMap (Accessed 2020) EPBC PMST tool (2020)

(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.

Comments	**Proposed clearing is not likely to be at variance to this Principle**
	Bridge 15 Biological Survey Area Four fauna habitat types were described and mapped: – Eucalypt woodland with mixed open shrubland and grasses – Shrubland – Planted non-endemic trees and shrubs – Low-lying dampland. No conservation significant fauna species were observed during RPS' 2019 survey. *Black Cockatoos* Eucalypt Woodland with mixed open shrubland and grasses, and Shrubland habitat types mapped for this area provide possible foraging and/or nesting and/or breeding opportunities for Black Cockatoos. No signs of Black Cockatoo foraging or breeding activity were observed during the field survey (RPS 2020). The closest known roosting site is located approximately 700 m from the proposal area (DBCA, 2021). The proposal area lies within a confirmed breeding area (DBCA, 2021). No Known Nesting Hollows or potentially suitable nesting hollows occur within the proposal area. A total of 150 Suitable Diameter Breast Height (DBH) Trees were recorded within the proposal area, of which one had an unsuitable hollow (RPS 2020; Kirkby 2020).

	Red-tailed Phascogale Although known to occur in the region, the Red-tailed Phascogale is unlikely to inhabit this area due to the habitat fragmentation along the roadside verges (RPS, 2020). To support the species, trees need to be of a sufficient age to provide hollows for nesting in limbs or logs, and grass trees (where present) need to have ample skirts to provide cover (RPS, 2020). Habitat within the proposal area is in poor condition, lacks vegetated understorey and is unlikely to be used by this species. *Fork-tailed Swift* This species is migratory and may potentially fly over this area, however clearing of up to 1.66 ha of native vegetation is unlikely to significantly impact this species. *Chudich* The Chuditch may utilise this area briefly whilst dispersing or foraging as the Eucalypt woodlands provide both shelter and feeding resources for this species. However, the proposal area is too small in extent to support any single individual. <u>Summary</u> The proposal area is considered to provide limited foraging habitat for Carnaby's Cockatoo and given there are no suitable hollow bearing trees within the proposal area and the extent of the vegetation within the local area (37.1 % remaining within a 20 km radius), the proposed clearing is not likely to be at variance to Principle (b).
Methodology	DBCA shapefiles Main Roads GIS Shapefiles Biological Survey reports (RPS, 2020; Ecoscape 2016, 2017) NatureMap (Accessed 2020) EPBC PMST tool (2020)

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

Comments	**Proposal is not likely to be at variance to this Principle**
	<u>Bridge 15 Survey Area</u> A 'listed and threatened flora' desktop assessment identified six conservation-significant species that may occur within this area. No conservation significant flora species were recorded during the survey and the 'residual likelihood of occurrence' for these species within this area is negligible (RPS, 2020). <u>Crossman Survey Area</u> A desktop assessment and likelihood assessment identified that no conservation significant flora species have previously been recorded in this area and no threatened flora is likely to occur (Ecoscape, 2016). No threatened or priority flora were recorded during the surveys (Ecoscape 2016, 2017). The proposal is not likely to be at variance to Principle (c).
Methodology	Biological Survey reports (RPS, 2020; Ecoscape 2016, 2017) DBCA shapefiles EPA (2016) Florabase (Accessed 2020)

(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.

Comments	**Proposed clearing is not at variance to this Principle**
	A desktop assessment of EPBC Act and BC Act listed TECs was undertaken using the following data sources: • DAWE EPBC Act PMST (10km radius buffer search) • DBCA –records of TECs (10km radius buffer search) The DBCA search identified no Threatened Ecological Communities (TECs) are likely to occur within the proposal area (10km radius). However, the DAWE search identified the *Eucalypt woodlands of the Western Australian Wheatbelt* TEC may occur within the search area (10km radius). *Eucalypt woodlands of the Western Australian Wheatbelt* TEC assessments and field surveys determined that none of the vegetation within the survey areas represented this TEC (RPS, 2020; Ecoscape 2016, 2017). The proposal is not at variance to Principle (d).
Methodology	DBCA shapefiles Main Roads GIS Shapefiles Biological Survey reports (RPS, 2020; Ecoscape 2016, 2017) EPBC PMST tool (2020)

(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.

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

The National Objectives and Targets for Biodiversity Conservation recognise that the retention of 30 per cent or more of the pre-clearing extent of each ecological community is necessary if Australia's biological diversity is to be protected (Commonwealth of Australia, 2001).

The proposal area vegetation is mapped as occurring within pre-European vegetation association 4 (medium woodland; marri and wandoo). This vegetation unit has less than 30% of its pre-European extent remaining in the State, bioregion, and Shire of Boddington (Table 6).

Table 6. Vegetation Association 4 – described as a Medium woodland; marri and wandoo (Government of Western Australia, 2018).

Pre-European Vegetation Association	Scale	Pre–European (ha)	Current Extent (ha)	% Remaining	% Remaining in DBCA reserves
Veg Assoc No. 4	Statewide	1,054,279.89	284,102.41	26.95	6.43
	IBRA Bioregion	1,022,712.69	277,087.18	27.09	6.45
	IBRA Sub-region	614,200.82	197,903.81	32.22	9.85
	Local Government Authority - Shire of Boddington	29,427.01	6,729.72	22.87	0.39

The proposal area comprises four native vegetation types:

- *Eucalyptus wandoo* subsp. *wandoo* and *Allocasuarina huegeliana* Open Forest
- *Eucalyptus wandoo* subsp. wandoo and *Eucalyptus marginata* Open Forest
- *Allocasuarina huegeliana* Low Forest

Approximately 55% of the proposal area is cleared and an extensively cleared association (Beard vegetation association 4), which retains below 30% of its pre-european extent is mapped for the local Shire area. However, only 5 % of the vegetation remaining is in Good or better condition as it is is fragmented and lacks vegetated understorey.

Consistent with the DWER assessed Crossman Proposal, which was immediately south of the proposal area, and given the degraded nature of the vegetation and that the local area and subregion retain 37.1 % (remaining within a 20 km radius) and 32.22% of their pre-European vegetation

	extents respectively, the remaining vegetation in the proposal area is not considered to be a significant remnant. Accordinly, the proposed clearing is not likely to be at variance to Principal (e). *Note: DWER's confirmation letter (D20#130588) determined the proposed Albany Hwy Crossman intersection clearing was not likely to be at variance with principles (a), (b) and (e). The Crossman project is located immediately south-east of the Bridge 15 proposal area and has a larger clearing footprint.*
Methodology	Commonwealth of Australia (2001) Aerial photography Government of Western Australia (2018) Main Roads GIS Shapefiles Biological Survey reports (RPS, 2020; Ecoscape 2016, 2017)

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

Comments	Proposed clearing is likely to be at variance to this Principle
	No wetland or riparian vegetation are present in the proposal area. Hotham River, a major non-perennial watercourse is located next to the proposal area. RPS' biological survey identified and mapped riparian vegetation for the Bridge 15 survey area (RPS, 2020); however, this vegetation type will not be cleared under CPS 818. The Peel-Yangorup System wetlands and Toolibin Lake (both RAMSAR listed sites) are located approximately 100 km east and west of the proposal area, respectively. There will be no impacts to these listed RAMSAR listed sites. No riparian vegetation will be cleared for the proposal using CPS 818/15. Accordingly, CPS 818/15 related clearing for the proposal is not likely to be at variance to Principle (f).
Methodology	DWER and DBCA shapefiles Biological Survey report (RPS 2020)

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

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

Table 7-Land Degradation Risks

Aspect	Risk
Flood Risk	<3% (majority of proposal area) 10-30% (near Hotham River)
Salinity	<3% (majority of of proposal area) 10-30% (near Hotham River)
Waterlogging	<3% (majority of proposal area) 10-30% (near Hotham River)
Water Erosion	10-30% (majority of proposal area) 3-10% (near Hotham River).
Wind Erosion	10-30%

The Natural Resource Management risk mapping (Table 7) indicates the proposal is at moderate risk of land degradation factors.

Data from RPS' 2019 biological survey indicate the proposal area occurs over brown lateritic loam. This soil type has a relatively good infiltration rate confirming the risk of waterlogging and flooding is low.

The small scale of clearing (1.66 ha of native vegetation) is unlikely to result in significant land degradation caused by water or wind erosion.

	The ASRIS Map indicates the proposal is located within an area of low to extremely low probability of occurrence of Acid Sulphate Soils. Accordingly, ASS is unlikely to be a significant issue. The proposed clearing is not likely to be at variance to Principle (g).
Methodology	ASRIS Map Viewer Biological Survey report (RPS 2020) Natural Resource Management ArcGIS layers

(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.

Comments	**Proposed clearing is not likely to be at variance to this Principle**
	The proposal area is not located within a conservation reserve or on DBCA land. The nearest Class A Reserve is located approximately 800m south-west of the proposal area. Given the distance of the clearing to the reserve, size and nature of works, the conservation area is unlikely to be impacted by clearing activities. The proposal area does not contain any Environmentally Sensitive Areas as declared under the EP Act. The proposed clearing is not likely to be at variance to this Principle (h).
Methodology	Landgate shapefiles 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.

Comments	**Proposed clearing is not likely to be at variance to this Principle**
	The proposal area lies within a surface water proclaimed area, but not within a Public drinking water source area or proclaimed groundwater area. Hotham River, a major non-perennial watercourse is located next to the proposal area. The proposed native vegetation clearing for the road approach and tie-ins to Albany Hwy is not likely to impact surface or underground water flows or quality. Drainage design will maintain flows similar to those currently in place for this length of road. The minor scale and linear nature of the clearing is unlikely to result in excessive levels of surface runoff that adversely effect surface or underground water flows or quality The proposed clearing is not likely to be at variance to Principle (i).
Methodology	DWER and DBCA shapefiles Main Roads GIS Shapefiles

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

Comments	**Proposed clearing is not likely to be at variance to this Principle**
	The proposal area is located in a region with annual rainfall precipitation levels over 400mm (668.9mm, Boddington - Station 009509, BoM 2020). The topography across the proposal area is gently undulating and soil in the proposal area occurs over brown lateritic loam (RPS, 2020), which are typically not prone to flooding risk. Hotham River, a major non-perennial watercourse is located next to the proposal area. Natural Resource Management risk mapping, see Principle (g) above, for the majority proposal area is less than 3% risk of flooding. The minor scale and linear nature of the clearing is unlikely to result in excessive levels of surface runoff that would increase the intensity or incidence of flooding. The proposed clearing is not likely to be at variance to Principle (j).
Methodology	BOM (2020) DAFWA Risk Mapping Shapefiles Biological Survey report (RPS 2020) Natural Resource Management ArcGIS layers

6 ADDITIONAL ACTIONS REQUIRED

Table 8 summarises what further pre-clearing impact assessment and vegetation management is required in accordance with CPS 818.

Table 8. Summary of Additional Management Actions Required by CPS 818

Impact of Clearing	Yes/No or NA	*Further Action Required*
1. The CAR indicates that the clearing is 'At Variance' or 'May be at Variance' with one or more of the Clearing Principles. Where the clearing is at variance or may be at variance to Clearing Principle (f) and no other Clearing Principle, and the area of the proposed clearing is less than 0.5 hectares in size and the Clearing Principle (f) impacts only relate to: (i) a minor non-perennial watercourse(s); (ii) a wetland(s) classed as a multiple use management category wetland(s); and/or (iii) a wetland that is not a defined wetland; the preparation of an Assessment Report, as required by condition 6(e), is not required.	**No**	No further action required
2. Clearing is at variance or may be at variance with Clearing Principle (g) land degradation, (i) surface or underground water quality or (j) the incidence of flooding.	**No**	No further action required.
3. The proposal involves clearing for temporary works (as defined by CPS 818).	**No**	No further action required.
4 a. Proposal 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**	Works is not likely to result in uninfested areas being infested by dieback.

Impact of Clearing	Yes/No or NA	*Further Action Required*
4b. Does the proposed works require clearing within or adjacent to DBCA estate in non-dry conditions?	**No**	No further action required.
5. Main Roads has been notified by DWER or an environmental specialist that the area to be cleared is susceptible to a pathogen other than dieback	**No**	No further action required.
6. The vegetation within the area to be cleared and/or the surrounding vegetation in a good or better condition and weeds likely to spread to and result in environmental harm to adjacent areas of native vegetation that are in good or better condition	**No**	Given the degraded nature of adjacent areas, it is unlikely that weeds are likely to be spread into adjacent areas that contain Good or better vegetation.

7 VEGETATION MANAGEMENT

Main Roads will avoid and minimise clearing native vegetation where possible. Vegetation will be managed in accordance with the Principal Environmental Management Requirements (PEMRs).

8 REFERENCES

Bureau of Meteorology Australia. (2020) Climate Averages for Australian Sites – Boddington (Station 009509) – Available online from http://www.bom.gov.au/climate/data/index.shtml Accessed 2020

CSIRO. (2014). Australian Soil Resource Information System (ASRIS) Database. Available online from http://www.asris.csiro.au Accessed 2020.

Commonwealth of Australia (2001) National Objectives and Targets for Biodiversity Conservation 2001 – 2005. Commonwealth of Australia, Canberra.

Department of Agriculture, Water and Environment (2020) Protected Matters Search Tool. Available online from http://www.environment.gov.au/epbc/protected-matters-search-tool. Accessed 2020

Department of Biodiversity, Conservation and Attractions (2021). Nature Map Biodiversity Tool. Available online from NatureMap (dbca.wa.gov.au). Accessed 2021

Department of Natural Resources and Environment (2002). Biodiversity Action Planning. Action planning for native biodiversity at multiple scales; catchment bioregional, landscape, local. Department of Natural Resources and Environment, Victoria.

Ecoscape (Australia) Pty Ltd (2016). Albany Highway H0001 SLK 118-119 (Crossman) Intersection Upgrades Biological Suvey.

Ecoscape (Australia) Pty Ltd (2017). Albany Highway H0001 SLK 118-119 (Crossman) Intersection Upgrades Biological Survey – Supplementary Survey.

Environmental Protection Authority (2020). Technical Guidance – Terrestrial vertebrate fauna surveys for Environmental Impact Assessment. Perth, Western Australia.

Environmental Protection Authority (2016). *Technical Guide – Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment* (eds. K Freeman, G Stack, S Thomas and N Woolfrey). Perth, Western Australia.

Glevan Consulting (2020). Phytophthora Dieback occurrence assessment - Albany Highway 117-118 SLK Bridge Replacement Project

Government of Western Australia. (2018). 2018 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of December 2017. WA Department of Biodiversity, Conservation and Attractions, Perth. Available online from: https://catalogue.data.wa.gov.au/dataset/dbca-statewide-vegetation-statistics

Government of Western Australia (2019). Native Vegetation Clearing Permits. Application, assessment, and management requirements under Part V Division 2 of the Environmental Protection Act 1986. Department of Water and Environmental Regulation.

Government of Western Australia (2014). WA Environmental Offset Guidelines. Perth, Western Australia.

Government of Western Australia (2011). WA Environmental Offset Policy. Perth Western Australia.

Kirkby (2020). Possible Black Cockatoo (*Calyptorhynchus* spp.) – Breeding Hollow Assessment, Crossman Bridge

Natural Resource Management in WA. (2021). SLIP portal, Soil-Landscape Mapping. Available online from: http://maps.agric.wa.gov.au/nrminfo/framesetup.asp. Accessed 2021

RPS Australia West Pty Ltd (2020) Biological Survey Report - Wheatbelt 20/21 Bridges Delivery Program Biological Survey – Southern Bridges