



## CLEARING PERMIT

*Granted under section 51E of the Environmental Protection Act 1986*

### PERMIT DETAILS

Area Permit Number: CPS 8926/1  
File Number: DWERVT5846  
Duration of Permit: From 27/03/2021 to 27/03/2023

### PERMIT HOLDER

Shire of Cranbrook

### LAND ON WHICH CLEARING IS TO BE DONE

Frankland-Kojonup Road Reserve (PIN 11632080), Frankland River.  
Frankland-Kojonup Road Reserve (PIN 11632082), Frankland River.  
Frankland-Kojonup Road Reserve (PIN 11632083), Frankland River.  
Frankland-Kojonup Road Reserve (PIN 11746613), Frankland River.  
Unnamed Road Reserve (PIN 11631761), Frankland River.  
Wingebellup Road reserve (PIN 11713505), Frankland River.

### AUTHORISED ACTIVITY

The permit holder must not clear more than 0.321 hectares of native vegetation within the area cross-hatched yellow in Figure 1 (Areas A to D) of Schedule 1.

### CONDITIONS

#### 1. Avoid, minimise, and reduce impacts and extent of clearing

In determining the *native vegetation* authorised to be cleared under this permit, the permit holder must apply the following principles, set out in descending order of preference:

- (a) avoid the *clearing* of *native vegetation*;
- (b) minimise the amount of *native vegetation* to be cleared; and
- (c) reduce the impact of *clearing* on any environmental value.

#### 2. Dieback and weed control

When undertaking any clearing or other activity authorised under this permit, the permit holder must take the following steps to minimise the risk of the introduction and spread of *weeds* and *dieback*:

- (a) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;
- (b) ensure that no *dieback* or *weed*-affected soil, *mulch*, *fill* or other material is brought into the area to be cleared; and
- (c) restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

### 3. Records that must be kept

The permit holder must maintain records relating to the listed relevant matters in accordance with the specifications detailed in Table 1.

**Table 1: Records that must be kept**

No.	Relevant matter	Specifications
1.	In relation to the authorised clearing activities generally	<ul style="list-style-type: none"><li>(a) The location where the <i>clearing</i> occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings;</li><li>(b) the date that the area was cleared;</li><li>(c) the size of the area cleared (in hectares);</li><li>(d) actions taken to avoid, minimise, and reduce the impacts and extent of <i>clearing</i> in accordance with <i>condition 1</i>; and</li><li>(e) actions taken to minimise the risk of the introduction and spread of <i>weeds</i> and <i>dieback</i> in accordance with <i>condition 2</i>.</li></ul>

### 4. Reporting

The permit holder must provide to the *CEO* the records required under *condition 3* of this permit when requested by the *CEO*.

## DEFINITIONS

In this permit, the terms in Table have the meanings defined.

**Table 2: Definitions**

Term	Definition
<i>CEO</i>	Chief Executive Officer of the Department responsible for the administration of the clearing provisions under the <i>Environmental Protection Act 1986</i> (WA).
<i>clearing</i>	has the meaning given under section 3(1) of the EP Act.
<i>condition</i>	a condition to which this clearing permit is subject under section 51H of the EP Act.
<i>Department</i>	means the department established under section 35 of the <i>Public Sector Management Act 1994</i> (WA) and designated as responsible for the administration of the EP Act, which includes Part V Division 3.
<i>dieback</i>	means the effect of <i>Phytophthora</i> species on native vegetation..
<i>fill</i>	means material used to increase the ground level, or to fill a depression.
<i>EP Act</i>	<i>Environmental Protection Act 1986</i> (WA)
<i>mulch</i>	means the use of organic matter, wood chips or rocks to slow the movement of water across the soil surface and to reduce evaporation.
<i>native vegetation</i>	has the meaning given under section 3(1) and section 51A of the EP Act.
<i>weeds</i>	means any plant – (a) that is a declared pest under section 22 of the <i>Biosecurity and Agriculture Management Act 2007</i> ; or (b) published in a Department of Biodiversity, Conservation and Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or (c) not indigenous to the area concerned.

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## END OF CONDITIONS

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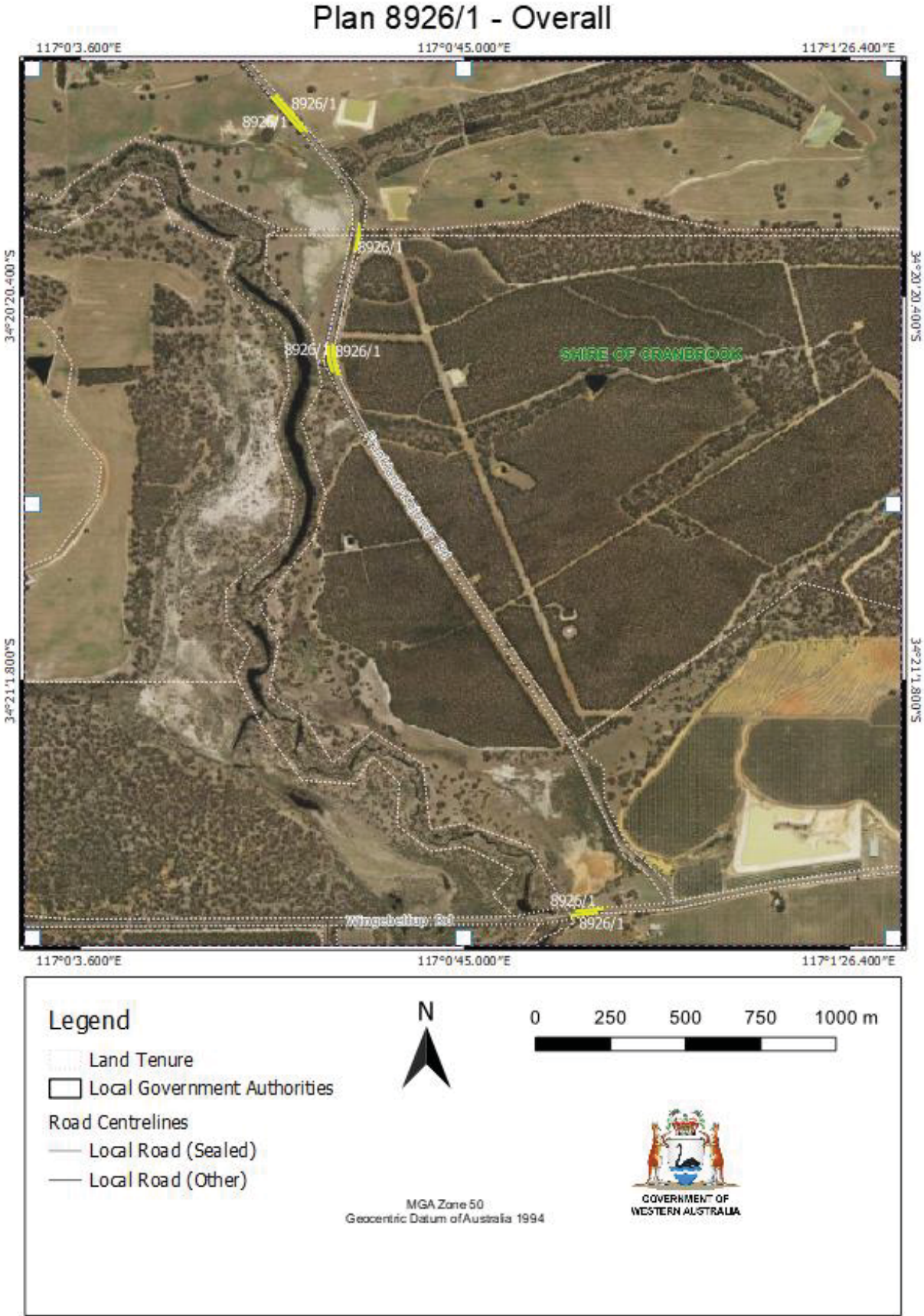
MIKE YOUNG  
A/MANAGER  
NATIVE VEGETATION REGULATION

*Officer delegated under Section 20  
of the Environmental Protection Act 1986*

4 March 2021

# SCHEDULE 1




Figure 1: Map of the boundaries of the areas within which clearing may occur (Areas A to D).




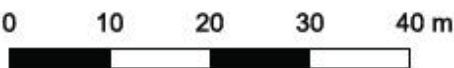
# Plan 8926/1 - Area A




**Legend**

-  CPS 8926-1
- Land Tenure
-  Local Government Authorities
- Road Centrelines
-  Other class

 N



MGA Zone 50  
Geocentric Datum of Australia 1994









GOVERNMENT OF  
WESTERN AUSTRALIA

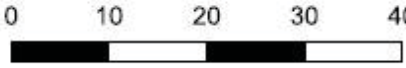
# Plan 8926/1 - Area B




**Legend**

-  CPS 8926-1
-  Land Tenure
-  Local Government Authorities
-  Road Centrelines
-  Other class

 N



MGA Zone 50  
Geocentric Datum of Australia 1994








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# Plan 8926/1 - Area C




**Legend**

-  CPS 8926-1
-  Land Tenure
-  Local Government Authorities
-  Road Centrelines
-  Other class


**N**



0 10 20 30 40 m



MGA Zone 50  
Geocentric Datum of Australia 1994









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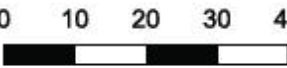
# Plan 8926/1 - Area D




**Legend**

-  CPS 8926-1
-  Land Tenure
-  Local Government Authorities
-  Road Centrelines
-  Other class





MGA Zone 50  
Geocentric Datum of Australia 1994



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# Plan 8926/1 - Area A

117°0'57.600"E

117°0'59.400"E

34°21'25.200"S

34°21'25.200"S

34°21'27.000"S

34°21'27.000"S

34°21'28.800"S


34°21'28.800"S

117°0'57.600"E

117°0'59.400"E



## Legend

 CPS 8926-1  
Land Tenure

 Local Government Authorities

Road Centrelines

 Other class



MGA Zone 50  
Geocentric Datum of Australia 1994



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# Plan 8926/1 - Area B

117°0'30.600"E

117°0'32.400"E

34°20'25.800"S

34°20'25.800"S

34°20'27.600"S


34°20'27.600"S



117°0'30.600"E

117°0'32.400"E

## Legend

 CPS 8926-1  
Land Tenure

 Local Government Authorities

 Road Centrelines

 Other class






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Geocentric Datum of Australia 1994



# Plan 8926/1 - Area C



## Legend

-  CPS 8926-1
- Land Tenure
-  Local Government Authorities
- Road Centrelines
-  Other class



MGA Zone 50  
Geocentric Datum of Australia 1994



# Plan 8926/1 - Area D

117°0'25.200"E

117°0'27.000"E

117°0'28.800"E

34°19'58.800"S

34°20'0.600"S

34°20'2.400"S

34°19'58.800"S

34°20'0.600"S

34°20'2.400"S




117°0'25.200"E

117°0'27.000"E

117°0'28.800"E

## Legend

 CPS 8926-1  
Land Tenure

 Local Government Authorities

Road Centrelines

 Other class



MGA Zone 50  
Geocentric Datum of Australia 1994







# Clearing Permit Decision Report

## 1. Application details and outcome

### 1.1. Permit application details

Permit number:	CPS 8926/1
Permit type:	Area permit
Applicant name:	Shire of Cranbrook
Application received:	28 May 2020
Application area:	0.321 hectares (ha) of native vegetation (as revised)
Purpose of clearing:	Road widening/upgrades
Method of clearing:	Mechanical means (Loader/excavator/mulcher)
Property:	Frankland-Kojonup Road reserve: PIN 11632080 PIN 11632082 PIN 11632083 PIN 11746613 Un-named road reserve: PIN 11631761 Wingebellup Road reserve: PIN 11713505
LGA area:	Shire of Cranbrook
Localities:	Frankland River

### 1.2. Description of clearing activities

The vegetation applied to be cleared is distributed across four separate areas along Frankland-Kojonup Road and Wingebellup Road, Frankland River, in the Shire of Cranbrook (see Figure 1, Section 1.5). The application is to selectively clear trees and shrubs for road widening purposes up to a maximum of two metres from the existing cleared road shoulder, along a total of approximately 450 metres of local road.

### 1.3. Decision on application and key considerations

Decision:	Granted
Decision date:	04 March 2021
Decision area:	0.321 hectares (ha) of native vegetation as depicted in Section 1.5, below.

### 1.4. Reasons for decision

This clearing permit application was submitted, accepted, assessed and determined in accordance with sections 51E and 51O of the *Environmental Protection Act 1986* (EP Act). The Department of Water and Environmental Regulation (DWER) advertised the application for 21 days and one submission was received. Consideration of matters raised in the public submission is summarised in Appendix B.

In making this decision, the Delegated Officer had regard for the site characteristics (Appendix C), relevant datasets (Appendix G.2), the findings of a flora and vegetation survey (Appendix A), the findings of a habitat tree assessment

(Appendix A), the clearing principles set out in Schedule 5 of the EP Act (Appendix D), relevant planning instruments and any other matters considered relevant to the assessment (Section 3).

The assessment identified that the proposed clearing may result in the introduction and spread of dieback and weeds into adjacent roadside vegetation, which could impact on the quality of the adjacent vegetation and its habitat values.

After consideration of the available information, as well as the applicant's minimisation and mitigation measures (Section 3.1), the Delegated Officer determined the proposed clearing can be minimised and managed to be unlikely to lead to an unacceptable risk to environmental values. The Delegated Officer decided to grant a clearing permit subject to conditions to:

- avoid, minimise and reduce the impacts and extent of clearing; and
- take hygiene steps to minimise the risk of the introduction and spread of dieback and weeds.

1.5. Site maps

Plan 8926/1 - Overall

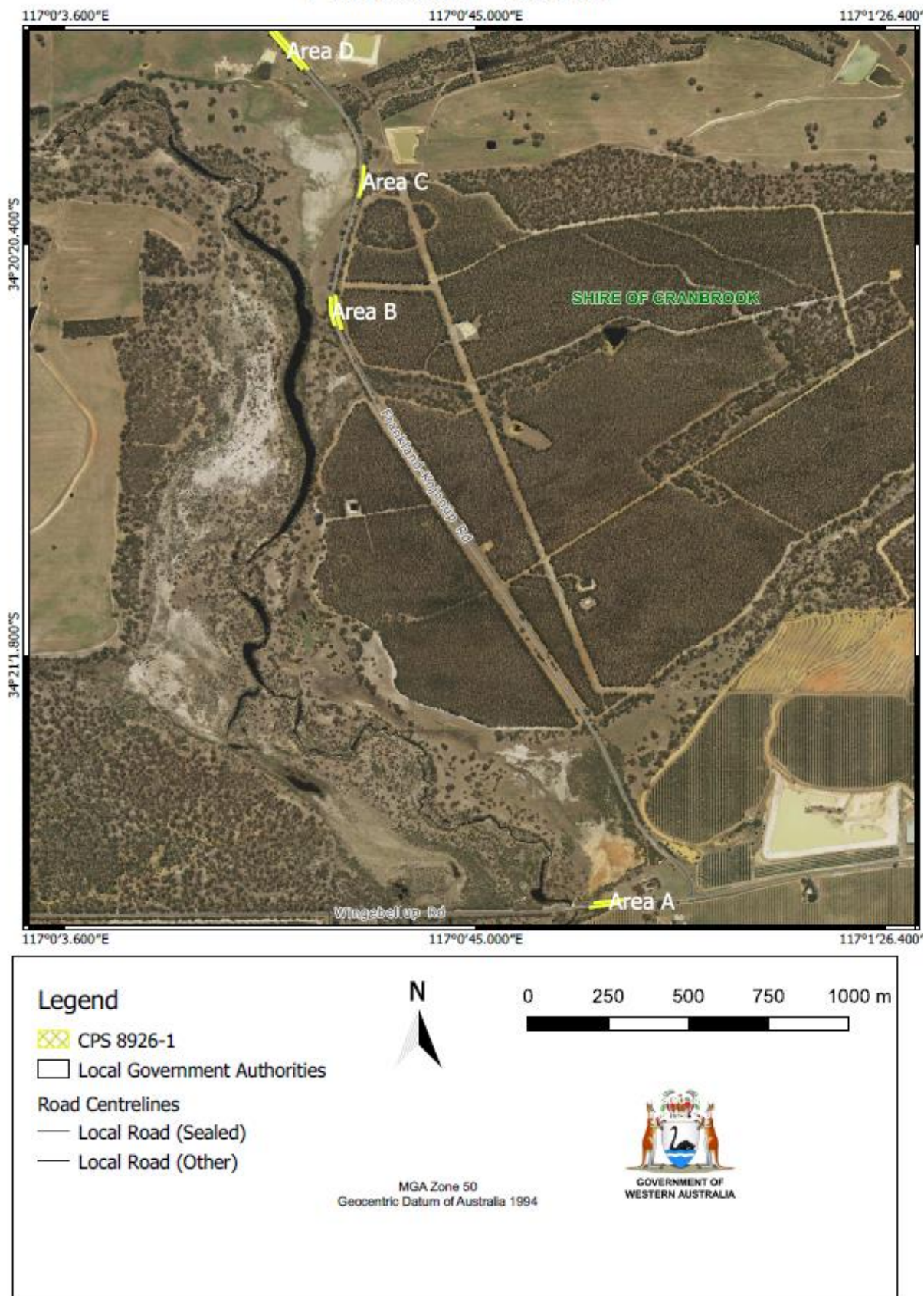







Figure 1. Map of the application area - Overall. The areas cross-hatched yellow indicate the areas authorised to be cleared under the granted clearing permit.




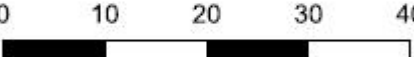
# Plan 8926/1 - Area A




**Legend**

-  CPS 8926-1
-  Land Tenure
-  Local Government Authorities
-  Road Centrelines
-  Other class

 N

 0 10 20 30 40 m

MGA Zone 50  
Geocentric Datum of Australia 1994



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Figure 1a. Map of the application area – Area A. The areas cross-hatched yellow indicate the areas authorised to be cleared under the granted clearing permit.

# Plan 8926/1 - Area B

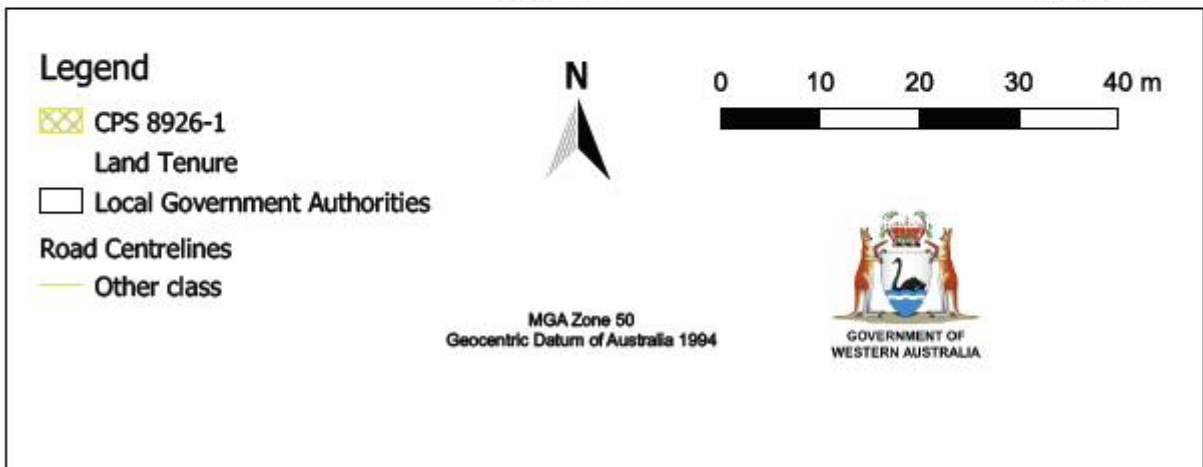


Figure 1b. Map of the application area – Area B. The areas cross-hatched yellow indicate the areas authorised to be cleared under the granted clearing permit.

# Plan 8926/1 - Area C



**Legend**

- CPS 8926-1
- Land Tenure
- Local Government Authorities
- Road Centrelines
- Other class

N

0 10 20 30 40 m

MGA Zone 50  
Geocentric Datum of Australia 1994

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Figure 1c. Map of the application area – Area C. The areas cross-hatched yellow indicate the areas authorised to be cleared under the granted clearing permit.

# Plan 8926/1 - Area D

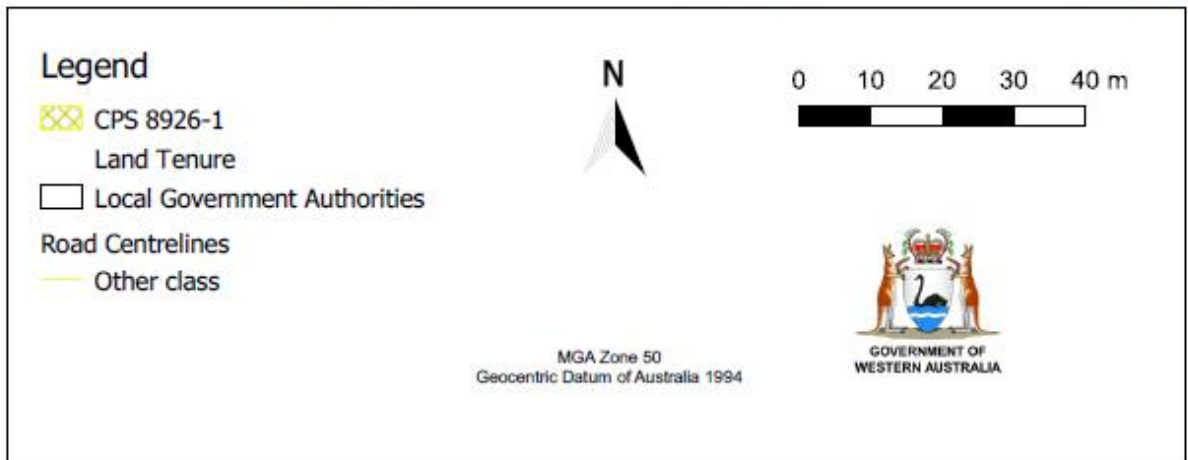


Figure 1d. Map of the application area – Area D. The areas cross-hatched yellow indicate the areas authorised to be cleared under the granted clearing permit.

## 2. Legislative context

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 1.4), the Delegated Officer has also had regard to the objects and principles under section 4A of the EP Act, particularly:

- the precautionary principle
- the principle of intergenerational equity
- the principle of the conservation of biological diversity and ecological integrity

Other legislation of relevance for this assessment include:

- *Biodiversity Conservation Act 2016* (WA) (BC Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)

The key guidance documents which inform this assessment are:

- *A guide to the assessment of applications to clear native vegetation* (December 2013)
- *Procedure: Native vegetation clearing permits* (DWER, October 2019)
- *Technical guidance - Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016)
- *Technical guidance - Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment* (EPA, 2020)

## 3. Detailed assessment of application

### 3.1. Avoidance and mitigation measures

The application as originally submitted considered seven clearing strips, within four areas, encompassing the entire width of the road reserve at each location. Collectively this represented an application area of 0.583 hectares (Shire of Cranbrook, 2020).

After a review and refinement of the engineering specifications (Appendix F.3) the proposed clearing was reduced to a total of 0.321 hectares for the seven clearing strips in the four areas (Figures 1a to 1d) (Shire of Cranbrook, 2021). Clearing native vegetation for road widening will be undertaken from between zero and two metres (maximum) from the existing cleared road shoulder.

The existing road pavement is approximately 5.8 metres in width with an approximated 0.8 metre shoulder. The proposal consists of widening the existing pavement to seven metres with a 1.5 metre shoulder on each side. The total widening therefore is approximately 2.6 metres maximum, consisting of a nominal widening width of 1.3 metres on either side. This may result in less clearing required depending upon the extent of the existing pavement. Conversely, execution may not result in a uniform widening, with more required on one side compared to the other. This is largely dependent upon road reserve boundaries, and particularly on corners. The application area is conservative and accommodates the flexibility required, including for drainage. The Shire of Cranbrook (the Shire) will only clear what is required to achieve the described widening.

Any trees overhanging the application area will have branches lopped, i.e. pruning, rather than the trees removed. Within the four areas in which clearing will occur (Area A to Area D) native vegetation will remain within the relevant road reserve. The revision to the application area is presented in Table 1.

**Table 1: Revised clearing areas (approximate) (Figure 1)**

	Area	Description	Section	Original application (ha)		Revised areas (ha)		Length (m)
NORTH	Area D	Frankland-Kojonup Rd	Area D (East side)	0.118	<b>0.187</b>	0.061	<b>0.121</b>	<b>157</b>
			Area D (West side)	0.069		0.059		
	Area C	Frankland-Kojonup Rd	Area C (East side)	0.139	<b>0.139</b>	0.045	<b>0.045</b>	<b>95</b>
			Area B (East side)	0.104	<b>0.173</b>	0.059	<b>0.101</b>	<b>102</b>
SOUTH	Area B	Frankland-Kojonup Rd	Area B (West side)	0.069				
			Area A	Wingebellup Rd	Area A (North side)	0.046	<b>0.083</b>	0.028
Area A (South side)	0.037	0.026						
<b>TOTALS:</b>				<b>0.583</b>		<b>0.321</b>		

Native overstorey trees over the application area consist predominantly of Flooded Gum (*Eucalyptus rudis*) and Wandoo (*Eucalyptus wandoo*). The exotic *Eucalyptus botryoides* (Bangalay) dominates Area D where it has likely been planted in the past. *Eucalyptus botryoides* is not native vegetation as defined in the EP Act.

The Shire have committed to planting 40 locally-provenanced native trees of the species occurring within the application area (that is, Flooded Gum and Wandoo) within one kilometre of the works undertaken, and within the same road reserves as those within the application area (Shire of Cranbrook, 2021). The Shire have committed to undertake this work at an optimal time whilst warmer days occur accompanied by rainfall. The Shire will select a mix of semi-potted sized Flooded Gums and Wandoo. Initially the plants will be watered twice a week until wetter conditions are experienced and the plants established (Shire of Cranbrook, 2021).

### 3.2. Assessment of environmental impacts

In assessing the application in accordance with section 51O of the EP Act, the Delegated Officer has examined the application and site characteristics (Appendix C) and considered whether the clearing poses a risk to environmental values. The assessment against the Clearing Principles is contained in Appendix D.

This assessment identified that the clearing may potentially pose a risk to the environmental values of biological values, significant remnant vegetation and riparian vegetation, and that these required further consideration. The detailed consideration and assessment of the clearing impacts against the specific environmental values is provided below. Where the assessment found that the clearing presents an unacceptable risk to environmental values, conditions aimed at controlling and/or ameliorating the impacts have been imposed under sections 51H and 51I of the EP Act. These are also identified below.

#### 3.2.1. Environmental value: biological values (flora) – Clearing Principles (a), (c) and (d)

**Assessment:** The application area consists of four discrete areas (Area A to Area D) (Figure 1). A flora and vegetation survey was undertaken over an area that included the application area on the 30 September 2020, in accordance with the Environmental Protection Authority (EPA) Technical Guidance (EPA, 2016) (Ecoedge, 2020). Seven vegetation units were described over the application area (Ecoedge, 2020) (Appendix C.1; Appendix F.1):

- Four units consist of *Eucalyptus rudis* (Flooded Gum) woodlands;
- One unit consists of mixed *Eucalyptus Wandoo* (Wandoo) - *Eucalyptus rudis* (Flooded Gum) woodland,
- One unit consists of mixed *Eucalyptus Wandoo* (Wandoo) - *Eucalyptus marginata* (Jarrah) woodland; and
- One unit consists of a non-native Eucalypt (*\*Eucalyptus botryoides*) over introduced grasses (Area D).

Over 70 per cent of the application area surveyed by Ecoedge (2020) was in either Completely Degraded or Degraded condition (Keighery 1994). The remainder was in Good condition, with no vegetation recording a condition ranking greater than Good (Appendix C.1; Appendix F.1.3).

Two significant ecological communities were identified as potentially occurring within the local area of the application area. That is the:

- Priority 3 listed *Eucalypt woodlands of the Western Australian Wheatbelt* (Wheatbelt Woodland) that is synonymous with the Eucalypt woodlands of the Western Australian Wheatbelt listed as Critically Endangered under the EPBC Act, and the

- Priority 3 listed *Proteaceae dominated kwongkan shrublands of the southeast coastal floristic province of Western Australia* (Kwongkan Shrublands) listed as Endangered under the EPBC Act.

Ecoedge (2020) undertook an assessment of the vegetation units occurring against the key diagnostic characteristics for these two ecological communities.

The surveyed area occurs within the Southeast Coastal Floristic Province which is the location diagnostic for this Kwongkan shrublands community. None of the vegetation units were characterised by any of the Proteaceae species diagnostic of this community, and none of the key diagnostic attributes of the Kwongkan Shrublands were recorded within the vegetation units occurring over the application area (Ecoedge, 2020).

Eucalypt woodlands have been described over the four areas of the application area. Area D consists of a non-native Eucalypt (*Eucalyptus botryoides*), however, areas 1 to 3 consist of native Eucalypt woodlands (Appendix C.1; Appendix F.1). None of the woodlands assessed by Ecoedge (2020) in the application area met the criteria of a State-listed Priority Ecological Community (PEC) or the criteria of a State or Federally-listed Threatened Ecological Community (TEC). The approved conservation advice (DoEE, 2015) indicates that occurrences of Wheatbelt Woodlands within the Southern Jarrah Forest IBRA sub-region are restricted to those areas receiving less than 600 millimetres of annual average rainfall. The application area is within an area that exceeds 600 millimetres of annual average rainfall. This is supported by DBCA mapping of occurrences of Wheatbelt Woodlands which reveal the nearest occurrences approximately 10 kilometres to the north-east of the application area (Ecoedge, 2020) (Appendix F.1.4) in areas receiving less than 600 millimetres of annual average rainfall. Wheatbelt Woodland remnants that remain reasonably intact generally align with vegetation condition ratings of Pristine, Excellent, Very Good or Good (Keighery 1994) (DoEE, 2016). Over 86 per cent of the overall area surveyed by Ecoedge (2020) was either Completely Degraded or Degraded (Keighery 1994), with over 70 per cent of the application area in either Completely Degraded or Degraded condition.

Records of conservation significant flora from available databases and photos of the proposed clearing area indicate that the vegetation present may represent habitat suitable for one Threatened and three Priority flora species, recorded within the local area (that is, a 10 kilometre radius). That is, the Threatened *Caladenia dorrienii*, the Priority 3 species *Acacia parkerae* and *Tetralochea exasperata*, and the Priority 4 species *Lasiopetalum cardiophyllum*.

*Caladenia dorrienii* is known from a location approximately 0.46 kilometres from the proposed clearing area and is known to occur in conjunction with open wandoo (*Eucalyptus wandoo*), jarrah (*E. marginata*) woodland, over low scattered shrubs (DEWHA, 2008). While the mapped soil types within the proposed clearing area do not align with those preferred by *Caladenia dorrienii*, it is known to occur adjacent to rivers, similar to parts of the proposed clearing area (see Figure 2). *Acacia parkerae* is known from a location approximately 7.6 kilometres from the proposed clearing area and occurs in association with *Eucalyptus wandoo* (Acacias of Australia, 2020). *Tetralochea exasperata* is known from a location approximately 9.4 kilometres from the proposed clearing area and occurs in open woodland to dense heath on a variety of soil types. *Lasiopetalum cardiophyllum* is known from a location approximately 2.2 kilometres from the proposed clearing area and is known to occur in association with Eucalypt woodlands (Shephard and Wilkins, 2018).

Ecoedge (2020) undertook a targeted flora and vegetation survey in accordance with EPA (2016) over a survey area that included the application area. A desktop study was undertaken prior to the targeted field survey that provided a likelihood of occurrence table for significant flora (Appendix F.1.5). The survey was undertaken during an optimal time in Spring 2020 with 48 native flora taxa recorded, along with 24 introduced species.

No Threatened flora, Priority flora or other flora of conservation significance were recorded within the survey area of Ecoedge (2020) that included the application area.

The vegetation under application has been assessed as predominantly Completely Degraded or Degraded, the vegetation present does not align with any PEC or TEC and Threatened or Priority flora taxa have been adequately surveyed for but not been recorded within the application area. With regard to the extent, composition and condition of the vegetation proposed to be cleared, it is considered that the application area is unlikely to comprise a high level of biodiversity and that conservation significant flora and ecological communities are unlikely to be impacted by the proposed clearing. However, adjacent native vegetation is susceptible to weed invasion and includes flora species susceptible to Dieback disease (*Phytophthora* sp).

**Conclusion:** Based on the above assessment, and the avoidance and mitigation measures provided by the Shire of Cranbrook (Section 3.1), the Delegated Officer has determined that the proposed clearing is considered acceptable subject to relevant conditions in relation to this environmental value. It is considered that the impacts of the proposed clearing can be managed by taking steps to minimise the risk of the introduction of Dieback disease and the spread of weeds.





### 3.2.2. Environmental value: biological values (fauna) – Clearing Principle (b)

**Assessment:** Based on available datasets six conservation significant fauna species have been recorded within the local area (Appendix C.2):

- *Calyptorhynchus latirostris* (Carnaby's Cockatoo);
- *Calyptorhynchus banksii naso* (Forest Red-tailed Black Cockatoo);
- *Calyptorhynchus baudinii* (Baudin's Black Cockatoo);
- *Cacatua pastinator pastinator* (Muir's Corella);
- *Leiopa ocellata* (Mallefowl); and
- *Phascogale tapoatafa* subsp. wambenger (South-western Brush-tailed Phascogale)

Vegetation structure and condition in the application area is not considered suitable to support the Vulnerable Mallefowl, which requires dense, long-unburnt shrublands and low woodlands dominated by Mallee and/or Acacia over a sandy substrate (Benshemesh 2007).

The Conservation Dependent South-western Brush-tailed Phascogale is a 'critical weight range' (CWR) mammal (with a weight between 35 grams and 5,500 grams) whose distribution and abundance have declined severely, most likely due to fox and feral cat predation (Burbidge and McKenzie 1989). This species has large home ranges and requires large areas of habitat, and due to the condition of the vegetation, and regional context with fragmented remnant vegetation in the local area, is not considered likely to occur within the application area.

#### **Black Cockatoo Species**

The application area is within the known distribution and predicted breeding range of the Carnaby's Cockatoo (*Calyptorhynchus latirostris*), Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*) and Baudin's black Cockatoo (*Calyptorhynchus baudinii*) (DSEWPaC, 2012). Based on DBCA datasets within the local area three records of the Forest Red-tailed Black Cockatoo, nine records of Baudin's Black Cockatoo, and two records of Carnaby's Cockatoo have been identified.

Black cockatoo habitat can be considered in terms of breeding habitat, night roosting habitat, and foraging habitat. Black cockatoos will generally forage up to 12 kilometres from an active breeding site (DSEWPaC, 2012). Following breeding, they will flock in search of food, usually within six kilometres of a night roost (DSEWPaC, 2012; Commonwealth of Australia, 2017; DPaW, 2013), but may range up to 20 kilometres (Commonwealth of Australia, 2017). Food resources within the range of breeding sites and roost sites are important to sustain populations, and foraging resources are therefore viewed in the context of known breeding and night roosting sites, particularly within 12 kilometres of an impact area. Black cockatoo night roosts are usually located in the tallest trees of an area, and in close proximity to both a food supply and surface water (Commonwealth of Australia, 2017).

A black cockatoo habitat tree assessment of the area was undertaken by Harewood (2020) (Appendix A). Habitat trees were identified and described over a survey area that was larger than, but included, the application area. Habitat trees were defined as all trees species that had a diameter at breast height (DBH) equal to or over 50 centimetres, or in the case of Wandoo (*Eucalyptus wandoo*) a DBH equal to or over 30 centimetres.

Of the 24 habitat trees identified over the broader survey area 14 were historical plantings (Harewood, 2020) of \**Eucalyptus botryoides* (Ecoedge, 2020) (that is, not considered native vegetation). None of the 24 trees supported hollows suitable for, or in use by, black cockatoos. The vast majority of the trees within the survey area were relatively young and as a consequence did not contain hollows of any size (Harewood, 2020). No black cockatoo foraging or roosting activity was observed.

Discounting \**Eucalyptus botryoides* because it is not a species known to support breeding by black cockatoos (DSEWPaC, 2012), five of the habitat trees identified by Harewood (2020) occur within the application area: three Wandoo (*Eucalyptus wandoo*) and two Flooded Gums (*Eucalyptus rudis*). No hollows were recorded within these trees and the application area is therefore considered not to currently represent breeding habitat. There is no evidence of night-roosting habitat for black cockatoos within the application area.

Geospatial datasets provided by DBCA (2019) show no breeding or roosting sites for black cockatoos within 6 kilometres or 12 kilometres of the application area. The closest confirmed breeding area is located approximately 17.5 kilometres north-west of the application area. The application area is therefore unlikely to be significant to provide foraging resources to support roosting or breeding black cockatoos. Additionally, native trees within and surrounding the application area comprise predominantly Flooded Gum (*Eucalyptus rudis*) which is not a preferred food resource for black cockatoos (Commonwealth of Australia, 2017; DSEWPaC, 2012). The application area is therefore considered unlikely to represent significant breeding, roosting or foraging habitat for black cockatoos.

#### **Other Conservation Significant or listed Species**

Muir's Corella is listed as a Species of special conservation interest (conservation dependent fauna) under the BC Act, and has been recorded in the local area. Habitat for the species typically comprises dry sclerophyll forests and open woodlands that contain trees with hollows suitable for breeding. Muir's Corella feeds predominantly on the

ground on a wide variety of corms, tubers and seeds from both native and introduced plant species including grain amongst stubble and in cattle and sheep feed-lots and is known to compete with stock for oats, wheat and barley (DPAW 2015). Native plant species eaten by Muir's Corella include the bulbs and roots of sundews *Drosera* spp and 'orchidaceous plants' as well as the seeds of marri (*Corymbia calophylla*) and spear grass (*Stipa* spp) (DPaW, 2015).

Although the habitat tree survey of Harewood (2020) focussed on habitat trees for black cockatoo species, no hollows were recorded in any of the 24 habitat trees assessed. Breeding habitat for Muir's Corella does not occur over the application area, and the native flora species occurring are not favoured food species for the species. Breeding and quality foraging habitat for Muir's corella does not occur over the application area and it is considered unlikely that the proposed clearing will impact this species.

Conclusion: Based on the above assessment, and the avoidance and mitigation measures provided by the Shire of Cranbrook (Section 3.1), the Delegated Officer has determined that the proposed clearing is considered acceptable subject to relevant conditions in relation to this environmental value. It is considered that the impacts of the proposed clearing can be managed by taking steps to minimise the risk of the introduction of Dieback disease and the spread of weeds.

### **3.2.3. Environmental value: significant remnant vegetation– Clearing Principle (e)**

Assessment: The national objectives and targets for biodiversity conservation in Australia include a target to prevent the clearance of ecological communities with an extent below 30 per cent of that present prior to the year 1750, below which species loss appears to accelerate exponentially at an ecosystem level (Commonwealth of Australia 2001).

The application area is located within the Jarrah Forest Bioregion as described by Thackway and Cresswell (1995), and within the Southern Jarrah Forest Sub-region. The Jarrah Forest Bioregion (JAF) as a whole retains approximately 53.25 per cent of its pre-European vegetation extent, with the Southern Jarrah Forest Sub-region (JAF02) retaining approximately 49.52 per cent of its pre-European vegetation extent. Over 69 per cent of the current extent of the Jarrah Forest Bioregion and the Southern Jarrah Forest Sub-region (JAF02) occurs within DBCA managed lands (all tenure types) (Shepherd *et al.* 2001) (Government of Western Australia, 2019) (Appendix C.3).

Within the local area of a 10 kilometre radius of the application area approximately 7,389 hectares of mapped native vegetation remains, or 23.35 per cent of its original extent. The application area is mapped regionally as Beard vegetation association 4, which is described as a Medium woodland of Marri and Wandoo (Shepherd *et al.*, 2001). Approximately 284,102 hectares of Beard vegetation association 4 remains in total, or 26.95 per cent of its original extent, with 27.09 per cent retained within the Jarrah Forest bioregion (JAF). Within the Shire of Cranbrook 33.12 per cent of vegetation association 4 remains (Government of Western Australia, 2019) (Appendix C.3).

Only two of the seven vegetation units described by Ecoedge (2020) align with the Beard vegetation association 4 description of Medium woodland of Marri and Wandoo (Units C and D), due to the presence of one dominant tree species, Wandoo (*Eucalyptus wandoo*). Marri (*Corymbia calophylla*) does not occur over the application area.

Units C and D comprise just 30 per cent of the application area as mapped by Ecoedge (2020), with 38.9 percent of the application area comprising the introduced eucalypt *Eucalyptus botryooides* over exotic grasses. The vast majority of the application area (over 70 per cent) has been assessed as either Degraded or Completely Degraded (Ecoedge, 2020).

The areas proposed for clearing run parallel with the Frankland River but are separated from the river and do not form part of any formally recognised ecological linkage. Surrounding areas are of plantations, vineyards, and native vegetation. It is unlikely that the proposed clearing areas offer ecological linkages based on the fragmented nature of the surrounding vegetation.

The vegetation proposed to be cleared comprises single trees or groups of trees with limited or no understorey. The Statewide extent remaining of the mapped Beard vegetation association 4 (at approximately 26.95 per cent) is below the Commonwealth government's 30 per cent retention threshold, however, 33.12 per cent of Beard vegetation association 4 is retained within the Shire of Cranbrook (Government of Western Australia 2019).

The application area is located within the Jarrah Forest Bioregion and given the makeup, condition, location, size, and extent of the native vegetation proposed to be cleared it is not considered significant as a remnant of native vegetation. Adjacent native vegetation, particularly in Areas 1, 2 and 3 is susceptible to weed invasion, and includes flora species susceptible to Dieback disease (*Phytophthora* sp).

Conclusion: Based on the above assessment, and the avoidance and mitigation measures provided by the Shire of Cranbrook (Section 3.1), the Delegated Officer has determined that the proposed clearing is acceptable subject to relevant conditions in relation to this environmental value. It is considered that the impacts of the proposed clearing can be managed by taking steps to minimise the risk of the introduction of Dieback disease and the spread of weeds.

### **3.2.4. Environmental value: land and water resources – Clearing Principle (f)**

Assessment: The Frankland River is located within 50 metres west of a section of the application area (Figure 2). Tributaries separate the individual areas within the application area and Ecoedge (2020) recorded riparian vegetation within Area A, Area B, and Area C in the form of *Eucalyptus rudis*.

Area A and Area B are located close to the Frankland River and support *Eucalyptus rudis*. Area C is associated with an ephemeral wetland in a depression at the base of a hill that also supports *Eucalyptus rudis*. Other species indicative of riparian habitats that were recorded within Area A, Area B, and Area C include; *Melaleuca raphiophylla*, *Melaleuca viminea*, and *Chorizandra enodis* (Ecedge 2020).

Native vegetation within Area A, Area B, and Area C is growing in association with a watercourse. However, given the makeup, condition, location, size, and extent of the native vegetation proposed to be cleared it is not considered to significantly impact the environmental values of the Franklin River. Due to the separation distance clearing is not considered likely to impact the water quality of the Franklin River through nutrient export or erosion.

Conclusion: Based on the above assessment, and the avoidance and mitigation measures provided by the Shire of Cranbrook (Section 3.1), the Delegated Officer has determined that the proposed clearing is acceptable subject to relevant conditions in relation to this environmental value. It is considered that the impacts of the proposed clearing can be managed by taking steps to minimise the risk of the introduction of Dieback disease and the spread of weeds.

### **3.3. Relevant planning instruments and other matters**

The application was advertised on the DWER website for a 21-day public comment period on 12 June 2020. One public submission was received in relation to this application (Appendix B).

The Shire of Cranbrook is the public authority that manages the application area (CPS 8926/1) as it is located entirely within the Frankland-Kojonup Road reserve (PINs 11632080, 11632082, 11632083, 11746613), an unnamed road reserve (PIN 11631761), and Wingebellup Road reserve (PIN 11713505). The application area is zoned Local Road and the clearing purpose is consistent with the Shire of Cranbrook Local Planning Scheme 4.

The application area is not located within any Surface Water Areas, Irrigation Districts, or Groundwater Areas proclaimed under the *Rights in Water and Irrigation Act 1914* (RIWI Act). No rivers proclaimed under the RIWI Act intersect the application area and no additional water licensing or permitting under DWER will be required. The application is not located in any *Country Areas Water Supply Act 1947* (CAWS Act) clearing control catchments, nor any Public Drinking Water Source Areas.

Spatial data indicates that no Registered Aboriginal Heritage sites listed in accordance with Section 5 of the *Aboriginal Heritage Act 1972* (WA) occur within the proposed clearing area. The proposed clearing area intersects with two sites (Place ID: 21909 – Yeriminup/Frankland Hunting and Camping Areas; Place ID: 21906 – Frankland River) which have a status of 'Stored Data/Not a Site' and therefore do not meet the requirements for an Aboriginal Heritage site listed under Section 5. It is the permit holder's responsibility to comply with the *Aboriginal Heritage Act 1972* (WA) and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

The Delegated Officer noted the applicant's stated purpose of the clearing, to improve road user and community safety by improving the safety of Kojonup-Frankland Road and Wingebellup Road east of the Frankland River crossing.

## Appendix A – Additional information provided by applicant

Information	Description
Further information regarding avoidance and minimisation measures, engineering specifications, and a reduction in the application area size (Shire of Cranbrook 2021).	This information was included in the consideration of avoidance and minimisation measures (Section 3.1) and within the assessment of environmental impacts (Section 3.2).
Ecoedge (2020). Reconnaissance and Targeted Flora and Vegetation Survey: Wingebellup Road and Kojonup -Frankland Road. Prepared for the Shire of Cranbrook by Ecoedge. PO Box 9179, Picton WA 6229. December 2020.	A Targeted and Reconnaissance Flora and Vegetation Survey over the application area in accordance with EPA Technical Guidance.  (See excerpts in Appendix F.1)
Harewood (2020). Habitat Tree Assessment of Proposed Clearing Areas (CPS 8926/1): Wingebellup Road and Kojonup-Frankland Road. Shire of Cranbrook. Version 1. Prepared for the Shire of Cranbrook by Greg Harewood. Zoologist. PO Box 755 Bunbury. WA. 6231. August 2020	An assessment of 24 habitat trees within the application area and their potential suitability for black cockatoos.  (See excerpts in Appendix F.2)

## Appendix B – Details of public submissions

Summary of comments	Consideration of comment
<b>Avoidance and minimisation</b>	
The applicant has not provided the rationale for the clearing, nor avoidance and/or minimisation actions.	The application area has been minimised and avoidance and minimisation strategies have been provided by the applicant through the assessment (section 3.1).
Proposed clearing is excessive as it is not necessary to clear the entire road reserve.	The entire road reserve will not be cleared (section 3.1).
Pruning, rather than clearing, is an alternative and should be conditioned <i>in lieu</i> of clearing within a Clearing Permit.	Pruning will be undertaken <i>in lieu</i> of clearing wherever feasible (section 3.1).
The application should be rejected without any substantial modifications.	The application area has been minimised and avoidance and minimisation strategies have been provided by the applicant (section 3.1). Flora and fauna surveys have quantified significance.
The applicant should be encouraged to contact other Shires to discuss how road safety concerns can be addressed without wholesale removal of vegetation.	The applicant has been requested by DWER to provide avoidance and minimisation strategies. With whom and how the Shire consults in regard to avoidance and minimisation strategies is not within the scope of this assessment.
<b>Biological information</b>	
No biological surveys have been undertaken.	<p>A Targeted Flora and Vegetation Survey over the application area in accordance with EPA Technical Guidance has been undertaken (Appendix A).</p> <p>An assessment of 24 habitat trees within the application area and their potential suitability for black cockatoos has been undertaken (Appendix A).</p> <p>Biological survey reports are publicly available via DWER's FTP site (clearing permit applications for public comment)</p>
There are six Priority and Threatened flora species in the surrounding area, and the application should be rejected if there is any impact to the Threatened <i>Caladenia dorrienii</i> .	A Targeted Flora and Vegetation Survey over the application area did not record any Priority or Threatened flora taxa, including <i>Caladenia dorrienii</i> . The survey was undertaken in late September 2020, during the optimal timing for surveys for <i>Caladenia dorrienii</i> .
<b>Administration</b>	
Re-advertise the application when survey and engineering works have been completed.	DWER advertise clearing permit applications once an application has been validated in accordance with sections 51E(1) and (2) of the EP Act. Relevant supporting information received by DWER during the assessment period is made publicly available via DWER's FTP site (clearing permit applications for public comment). Once a decision has been made to grant a permit under section 51E of the EP Act, a 21 day appeals period is stipulated whereby the applicant, or any third party, may appeal against the grant of the permit or its conditions under section 101A of the EP Act.

## Appendix C – Site characteristics

The information provided below describes the key characteristics of the area proposed to be cleared and is based on the best information available to DWER at the time of this assessment. This information was used to inform the assessment of the clearing against the Clearing Principles, contained in Appendix D.

### C.1. Site characteristics

Site characteristic	Details																								
Local context	<p>The application area is located within the Jarrah Forest (JAF) IBRA Bioregion, and the Southern Jarrah Forest (JAF02) IBRA sub-region. The proposed clearing area consists of seven individual strips of native vegetation in three areas along Kojonup-Frankland Road, and one area along Wingebellup Road (Figure 2).</p> <p>Plantations occur to the south and east, along with a combination of cleared agricultural land and remnant native vegetation adjacent to the road reserves (Figure 2).</p> <p>The Frankland River watercourse occurs to the west of the proposed clearing area. The proposed clearing areas are small, isolated remnants in a highly cleared landscape. Spatial data indicates the local area (10 kilometre radius of the proposed clearing area) retains approximately 23.4 percent of the original native vegetation cover. Beard vegetation association 4, within which the clearing will occur, retains approximately 26.95 per cent of its pre-European extent (Appendix C3)</p>																								
Vegetation description	<p>Vegetation within the proposed clearing area consists of mixed Eucalypt woodland, and isolated trees. Overstorey tree include <i>Eucalyptus rudis</i>, <i>Eucalyptus wandoo</i>, <i>Eucalyptus marginata</i>, and the introduced <i>*Eucalyptus botryoides</i> (Area D).</p> <p>Seven vegetation units were described by Ecoedge (2020), with most of the vegetation in degraded condition due to the occurrence of the vegetation in road reserves in a predominantly agricultural area (Ecoedge, 2020) (Appendix F.2).</p> <table border="1"> <thead> <tr> <th>Vegetation Unit</th> <th>Description</th> <th>Condition</th> <th>Area (ha)</th> <th>Percentage of application area</th> </tr> </thead> <tbody> <tr> <td>Vegetation Unit A</td> <td>Mid Open woodland of <i>Eucalyptus rudis</i> subsp. <i>rudis</i> over isolated clumps of <i>Melaleuca viminea</i> mid-shrubland over a sparse sedgeland of <i>Lepidosperma leptostachyum</i> and an open forbland of <i>*Ursinia anthemoides</i>, <i>*Romulea rosea</i> and <i>Kennedia prostrata</i> and a sparse grassland of <i>*Briza maxima</i>, <i>*Lolium perenne</i> and <i>Neurachne alopecuroides</i> over a gravelly red-brown loam</td> <td>Completely Degraded to Degraded</td> <td>0.025</td> <td>8.2 %</td> </tr> <tr> <td>Vegetation Unit B</td> <td>Mid open woodland of <i>Eucalyptus rudis</i> subsp. <i>rudis</i> over a low woodland of <i>*Acacia dealbata</i> over a grassland of <i>*Avena barbata</i>, <i>*Briza maxima</i> and <i>*Lolium perenne</i> and an open forbland of <i>Ursinia anthemoides</i> over a gravelly red-brown loam</td> <td>Completely Degraded</td> <td>0.026</td> <td>8.2 %</td> </tr> <tr> <td>Vegetation Unit C</td> <td><i>Eucalyptus wandoo</i>, <i>E. rudis</i> subsp. <i>rudis</i> woodland over sparse <i>Melaleuca raphiophylla</i> and <i>Acacia saligna</i> trees over <i>Allocasuarina lehmanniana</i> subsp. <i>lehmanniana</i>, <i>Hakea prostrata</i> Sparse mid shrubland over a low shrubland of <i>Hibbertia pilosa</i>, <i>Dianella divaricata</i> with occasional <i>H. amplexicaulis</i> and <i>Conostylis aculeata</i> subsp. <i>aculeata</i> over a sparse <i>Desmocladius asper</i> sedgeland and <i>*Briza</i></td> <td>Degraded to Good</td> <td>0.037</td> <td>12.1 %</td> </tr> </tbody> </table>					Vegetation Unit	Description	Condition	Area (ha)	Percentage of application area	Vegetation Unit A	Mid Open woodland of <i>Eucalyptus rudis</i> subsp. <i>rudis</i> over isolated clumps of <i>Melaleuca viminea</i> mid-shrubland over a sparse sedgeland of <i>Lepidosperma leptostachyum</i> and an open forbland of <i>*Ursinia anthemoides</i> , <i>*Romulea rosea</i> and <i>Kennedia prostrata</i> and a sparse grassland of <i>*Briza maxima</i> , <i>*Lolium perenne</i> and <i>Neurachne alopecuroides</i> over a gravelly red-brown loam	Completely Degraded to Degraded	0.025	8.2 %	Vegetation Unit B	Mid open woodland of <i>Eucalyptus rudis</i> subsp. <i>rudis</i> over a low woodland of <i>*Acacia dealbata</i> over a grassland of <i>*Avena barbata</i> , <i>*Briza maxima</i> and <i>*Lolium perenne</i> and an open forbland of <i>Ursinia anthemoides</i> over a gravelly red-brown loam	Completely Degraded	0.026	8.2 %	Vegetation Unit C	<i>Eucalyptus wandoo</i> , <i>E. rudis</i> subsp. <i>rudis</i> woodland over sparse <i>Melaleuca raphiophylla</i> and <i>Acacia saligna</i> trees over <i>Allocasuarina lehmanniana</i> subsp. <i>lehmanniana</i> , <i>Hakea prostrata</i> Sparse mid shrubland over a low shrubland of <i>Hibbertia pilosa</i> , <i>Dianella divaricata</i> with occasional <i>H. amplexicaulis</i> and <i>Conostylis aculeata</i> subsp. <i>aculeata</i> over a sparse <i>Desmocladius asper</i> sedgeland and <i>*Briza</i>	Degraded to Good	0.037	12.1 %
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Vegetation Unit C	<i>Eucalyptus wandoo</i> , <i>E. rudis</i> subsp. <i>rudis</i> woodland over sparse <i>Melaleuca raphiophylla</i> and <i>Acacia saligna</i> trees over <i>Allocasuarina lehmanniana</i> subsp. <i>lehmanniana</i> , <i>Hakea prostrata</i> Sparse mid shrubland over a low shrubland of <i>Hibbertia pilosa</i> , <i>Dianella divaricata</i> with occasional <i>H. amplexicaulis</i> and <i>Conostylis aculeata</i> subsp. <i>aculeata</i> over a sparse <i>Desmocladius asper</i> sedgeland and <i>*Briza</i>	Degraded to Good	0.037	12.1 %																					

		<i>maxima</i> , <i>Austrostipa elegantissima</i> , <i>Neurachne alopecuroides</i> open grassland over gravelly red brown loam			
	Vegetation Unit D	<i>Eucalyptus wandoo</i> , with occasional <i>E. marginata</i> mid-woodland over a mid-shrubland of <i>Allocasuarina lehmanniana</i> subsp. <i>lehmanniana</i> , <i>Hakea prostrata</i> , <i>Kunzea glabrescens</i> and <i>Leptospermum erubescens</i> over a low-shrubland of <i>Gastrolobium praemorsum</i> , <i>Hypocalymma angustifolium</i> , <i>G. spinosum</i> and <i>Hibbertia pilosa</i> over a grassland of <i>*Briza maxima</i> , <i>B. minor</i> and <i>Neurachne alopecuroides</i> with isolated clumps of forbs including <i>*Ursinia anthemoides</i> , <i>Caesia micrantha</i> , and <i>Sowerbaea laxiflora</i> on gravelly red brown loam	Degraded to Good	0.056	18.1 %
	Vegetation Unit E	<i>Eucalyptus rudis</i> subsp. <i>rudis</i> woodland over <i>Ehrharta longiflora</i> closed grassland with a sparse forbland of <i>Trifolium</i> spp., <i>Raphanus raphanistrum</i> , <i>Hibbertia pilosa</i> and <i>Monadenia bracteata</i> and isolated clumps of the sedge <i>Lepidosperma leptostachyum</i> over brown loam	Completely Degraded to Degraded	0.015	4.7 %
	Vegetation Unit F	<i>Eucalyptus rudis</i> subsp. <i>rudis</i> woodland over a mid-shrubland of <i>Kunzea glabrescens</i> and <i>Melaleuca blaeriifolia</i> over an open sedgeland of <i>Cyathochaeta avenacea</i> and <i>Chorizandra enodis</i> and a grassland of <i>Ehrharta longiflora</i> and <i>Briza maxima</i> with isolated clumps of the forbs <i>*Rumex crispus</i> , <i>Caesia micrantha</i> , <i>Stylidium crassifolium</i> and <i>Sowerbaea laxiflora</i> over brown clay	Completely Degraded to Good	0.031	9.8 %
	Vegetation Unit G	<i>*Eucalyptus botryoides</i> over introduced grassland of <i>*Ehrharta longiflora</i> , <i>*Avena barbata</i> , <i>*Briza maxima</i> and <i>*Paspalum dilatatum</i> (in wetter areas) with isolated clumps of <i>Allocasuarina lehmanniana</i> subsp. <i>lehmanniana</i> , <i>Hakea lissocarpa</i> and <i>Xanthorrhoea preissii</i> mid shrubland over isolated low shrubs of <i>Acacia pulchella</i> and isolated clumps of the forbs <i>Dianella divaricate</i> and <i>Conostylis aculeata</i> subsp. <i>aculeata</i> and isolated clumps of the sedges <i>Lepidosperma squamatum</i> and <i>Tetraria capillaris</i> on gravelly red brown loam	Completely Degraded to Good	0.121	38.9 %

Vegetation condition

Vegetation condition (Keighery, 1994) (Appendix E) was assessed over the four discrete areas within the application area (Ecoedge, 2020) and is presented in the two tables below with mapping provided in Appendix F.1.3.

Over 70 per cent of the application area as a whole is in a Completely Degraded to Degraded condition.

Condition (Keighery (1994))	Area (ha)	Percentage of application area	
Completely degraded	0.180	58.1 %	71.3 %
Degraded	0.041	13.2 %	
Good	0.089	28.7 %	28.7 %

Area A is in Completely Degraded to Degraded condition. Areas B, C and D support small areas in Good condition.

Area	Description	Condition	ha
A	Wingebellup Rd (south)	Completely Degraded	0.040
		Degraded	0.011
B	Frankland -Kojonup Rd (south)	Degraded	0.022
		Good	0.072
C	Frankland -Kojonup Rd (centre)	Completely Degraded	0.030
		Degraded	0.007
		Good	0.009
D	Frankland -Kojonup Rd (north)	Completely Degraded	0.110
		Degraded	0.001
		Good	0.009

Soil description

The proposed clearing area occurs within three soil subsystems of the Frankland Hills system, as described by DPIRD (2017) below:

- **Frankland Hills 2:** Upper to lower slopes surrounding 254Fh\_1. Loamy gravels, Duplex sandy gravels and Deep sandy gravels are widespread with Grey deep sandy duplex and loamy earth soils common also. Jarrah - marri forest and woodland with wandoo.
- **Frankland Hills 3:** Minor valleys. Duplex sandy gravel soils are common with loamy and deep sandy gravels.
- **Frankland Hills 7:** Incised drainage of the Frankland River including narrow floodplain and flanking slopes. Soils are predominantly brown loamy earth and duplex sandy gravels, deep sandy duplex with saline wet and semi wet soils.

Ecoedge (2020) describe the soils as; brown loams, brown clays, and gravelly red-brown loams.



Land degradation risk

The proposed clearing area is mapped within the Frankland Hills System and within the 'Frankland Hills 2', 'Frankland Hills 3' and 'Frankland Hills 7' subsystems (DPIRD, 2017). Land degradation risk for each system is summarised in the table below and is expressed as the percentage of that subsystem being at risk, and its associated risk rating.

<b>Frankland Hills 2 Hazard/Aspect</b>	<b>Degradation risk (% of subsystem at risk)</b>	<b>Risk rating</b>
Wind erosion	78%	High to Extreme
Waterlogging / inundation	8%	Moderate to Very High
Water Erosion	0%	Very High to Extreme
Salinity	0%	Moderate
Flood risk	0%	Moderate to High
Phosphorus export	9%	High to Extreme

<b>Frankland Hills 3 Hazard/Aspect</b>	<b>Degradation risk (% of subsystem at risk)</b>	<b>Risk rating</b>
Wind erosion	65%	High to Extreme
Waterlogging / inundation	22%	Moderate to Very High
Water Erosion	8%	Very High to Extreme
Salinity	2%	Moderate
Flood risk	17%	Moderate to High
Phosphorus export	27%	High to Extreme

<b>Frankland Hills 7 Hazard/Aspect</b>	<b>Degradation risk (% of subsystem at risk)</b>	<b>Risk rating</b>
Wind erosion	42%	High to Extreme
Waterlogging / inundation	20%	Moderate to Very High
Water Erosion	20%	Very High to Extreme
Salinity	48%	Moderate
Flood risk	20%	Moderate to High
Phosphorus export	30%	High to Extreme

Waterbodies

The desktop assessment and aerial imagery indicates that one mainstream waterbody, the Frankland River, runs in a north-west to south-east direction, west of the proposed clearing area. The nearest section of the proposed clearing area occurs along Wingebellup Road and is approximately 57 metres to the east of the Frankland River (Figure 2). Spatial data indicates that there are no wetlands mapped within the proposed clearing area (Figure 2).

Vegetation Units A, B, C, E and F incorporate riparian vegetation predominantly due to the presence of *Eucalyptus rudis*. Other wetland dependent species recorded by Ecoedge (2020) include *Melaleuca raphiophylla*, *Melaleuca viminea*, and *Chorizandra enodis* (Ecoedge, 2020).

- Vegetation Units A, B, and C have vegetation associated with the Frankland River.
- Vegetation Units E and F have vegetation associated with an ephemeral wetland in a depression at the base of a hill (Ecoedge, 2020).

Riparian vegetation due to the presence of *Eucalyptus rudis* is associated with Areas A, B, and C. Area D incorporates the non-native species *Eucalyptus botryoides* over introduced grassland and does not represent riparian vegetation.

Hydrogeography	<p>The application area is:</p> <ul style="list-style-type: none"> <li>• Not located within any Surface Water Areas or Irrigation Districts proclaimed under the RIWI Act;</li> <li>• Not located within any Groundwater Areas proclaimed under the RIWI Act;</li> <li>• Not located within any CAWS Act Clearing Control Catchments; and</li> <li>• Not located within any Public Drinking Water Source Areas.</li> </ul> <p>Groundwater has been mapped at 3,000-7,000 TDS mg / L</p>
Conservation areas	<p>The proposed clearing area is does not intersect with any Bush Forever sites or DBCA managed lands.</p> <p>An unnamed timber reserve occurs 9.1 kilometres north-west of the northernmost section of the application area on Kojonup-Frankland Road. Quindinup Nature Reserve occurs approximately 12 kilometres south-west of the southernmost section of the application area along Wingebellup Road.</p>
Climate and Landform	<p>The proposed clearing area is situated within the 'Temperate – distinctly dry and warm summer' Köppen climate class (Commonwealth of Australia 2005).</p> <p>The application area is situated within the 'Warren-Denmark Southland Zone', described as: "Rises in a series of broad benches from the Southern Ocean north to the Blackwood Valley. Deeply weathered granite and gneiss overlain by Tertiary and Quaternary sediments in the south. Swampy in places" (DPIRD, 2017).</p>

## C.2. Ecosystem, flora and fauna analysis

With consideration for the site characteristics set out above, relevant datasets (Appendix G), the following conservation significant flora and fauna species, and ecological communities may be impacted by the clearing.

- **See Appendix F.1 and Appendix F.2 for relevant biological survey excerpts.**

Ecological Community	Distance of closest record to application area (kilometres)	Suitable soil type? (flora, ecological community)	Suitable vegetation type? (flora, ecological community)	Are surveys adequate to identify? (Y,N)
<i>Eucalypt woodlands of the Western Australian Wheatbelt</i> (P3 BC Act, 'Critically Endangered' EPBC Act)	9.9	Yes	Possible <i>Eucalyptus wandoo</i> present	Yes. None of the vegetation units meet the criteria for State or Federal TEC or PEC (Ecoedge, 2020)

Flora	Distance of closest record to application area (kilometres)	Suitable soil type? (flora, ecological community)	Suitable vegetation type? (flora, ecological community)	Are surveys adequate to identify? (Y,N)
<i>Acacia parkerae</i> (P3)	7.6	Yes brown loam, clay or clay loam (normally not lateritic)	Yes typically grows in association with <i>Eucalyptus wandoo</i>	Yes No Priority or threatened flora recorded by (Ecoedge, 2020)
<i>Caladenia dorrienii</i> (EN)	0.46	No Clayey loam. Moist sites adjacent to rivers and seasonal creeks.	Yes open wandoo ( <i>Eucalyptus wandoo</i> ), jarrah ( <i>E. marginata</i> ) woodland, over low scattered shrubs	Yes No Priority or threatened flora recorded by (Ecoedge (2020)
<i>Diuris drummondii</i> (VU)	6.2	No Low-lying depressions, swamps.	No Woodland of <i>Melaleuca</i> sp. And <i>Eucalyptus rudis</i>	Yes No Priority or threatened flora recorded by (Ecoedge, 2020)
<i>Lasiopetalum cardiophyllum</i> (P4)	2.2	Yes Lateritic gravelly soils, sandy clay. Flats, hillslopes.	Yes Eucalypt woodland	Yes No Priority or threatened flora recorded by (Ecoedge, 2020)
<i>Tetradlea exasperata</i> (P3)	9.4	Yes White-grey sand, sandy loam with gravel, orange-brown gravelly loam.	Yes Open woodland to dense heath	Yes No Priority or threatened flora recorded by (Ecoedge, 2020)

Fauna	Distance of closest record to application area (kilometres)	Potential habitat present	Likelihood of occurrence	Are surveys adequate to identify? (Y/N)
<i>Cacatua pastinator pastinator</i> (Muir's Corella) (CD)	4.1	Yes	Possible	Yes
<i>Calyptorhynchus banksii naso</i> (Forest red-tailed Black Cockatoo) (VU)	6.1	Yes	Possible	Yes 24 habitat trees identified none of which containing suitable hollows (Harewood, 2020)
<i>Calyptorhynchus baudinii</i> (Baudin's Cockatoo) (EN)	0 Secondary sign mapped within application area	Yes	Possible	Yes 24 habitat trees identified none of which containing suitable hollows (Harewood, 2020)
<i>Calyptorhynchus latirostris</i> (Carnaby's Cockatoo) (EN)	7.4	Yes	Possible	Yes 24 habitat trees identified none of which containing suitable hollows (Harewood, 2020)
<i>Leipoa ocellata</i> (Malleefowl) (VU)	8.0	No	Unlikely	Yes
<i>Phascogale tapoatafa wambenger</i> (Brush-tailed Phascogale - SW) (CD)	6.2	No	Unlikely	Yes

Where CD = Species of special conservation interest (conservation dependent fauna) (s14 BC Act)

### C.3. Vegetation extent

	Pre-European extent (ha)	Current extent (ha)	Remaining (%)	Current extent in all DBCA managed land (ha)	Current extent in all DBCA managed land (proportion of current extent) (%)
<b>IBRA Bioregion and Sub-region</b>					
Jarrah Forest (JAF)	4,506,660	2,399,838	53.25	1,673,614	69.74
South Jarrah Forest (JAF02)	2,607,880	1,291,458	49.52	904,028	70.00
<b>Beard vegetation association 4</b>					
TOTAL	1,054,280	284,102	26.95	67,765	23.85
Within JAF Bioregion	1,022,713	277,087	27.09	65,961	23.81
Within JAF02 Sub-region	408,512	79,183	19.38	5,483	6.92
<b>Local area (10 km)</b>					
Remnant vegetation	31,641	7,389	23.35		

## Appendix D – Assessment against the Clearing Principles

Assessment against the Clearing Principles	Variance level	Is further consideration required?
<b>Environmental value: biological values</b>		
<p><u>Principle (a):</u> <i>“Native vegetation should not be cleared if it comprises a high level of biodiversity.”</i></p> <p><u>Assessment:</u> Seven vegetation units were described over the application area (Ecoedge, 2020): Four consist of <i>Eucalyptus rudis</i> (Flooded Gum) woodland, two consist of mixed <i>Eucalyptus Wando</i> (Wandoo) woodland, and one consists of a non-native Eucalypt (<i>Eucalyptus botryoides</i>) over introduced grasses. Over 86 per cent of the area surveyed by Ecoedge (2020) was either Degraded or Completely Degraded (Keighery 1994). The remainder was in Good condition, with no vegetation recording a condition ranking greater than Good. None of the woodlands meet the criteria of a State-listed Priority Ecological Community (PEC) or the criteria of a State or Federally-listed Threatened Ecological Community (TEC). No Threatened or Priority flora taxa were recorded over the area surveyed by Ecoedge (2020), and habitat is not considered significant for fauna. The native vegetation proposed to be cleared is not likely to comprise a high level of biodiversity.</p>	Is not likely to be at variance	Yes (Section 3.2.1)
<p><u>Principle (b):</u> <i>“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.”</i></p> <p><u>Assessment:</u> The application area does not provide significant habitat for Priority or Threatened fauna species. Three species of black cockatoo are known from the local area, as well as Muir’s Corella (Appendix C.2.c). No breeding or roosting habitat is present and foraging habitat for all four species is of low quality.</p>	Is not likely to be at variance	Yes (Section 3.2.2)
<p><u>Principle (c):</u> <i>“Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.”</i></p> <p><u>Assessment:</u> No Threatened flora taxa were recorded by Ecoedge (2020). Over 86 per cent of the area surveyed was either Degraded or Completely Degraded (Keighery 1994) with no areas assessed higher than Good condition. The native vegetation proposed to be cleared is not likely to include, or be necessary for, the continued existence of, Threatened flora.</p>	Is not likely to be at variance	Yes (Section 3.2.1)
<p><u>Principle (d):</u> <i>“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.”</i></p> <p><u>Assessment:</u> None of vegetation units described by Ecoedge (2020) meet the criteria of a Threatened Ecological Community endorsed by the Western Australian Minister for Environment. The vegetation units described across the surveyed area are primarily in a Completely Degraded to Degraded condition due to the occurrence of the vegetation in road reserves in a predominantly agricultural setting. Native vegetation proposed to be cleared is unlikely to comprise the whole, or a part of, or be necessary for the maintenance of a Threatened Ecological Community.</p>	Is not likely to be at variance	Yes (Section 3.2.1)

Assessment against the Clearing Principles	Variance level	Is further consideration required?
<b>Environmental values: significant remnant vegetation and conservation areas</b>		
<p><u>Principle (e):</u> <i>“Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.”</i></p> <p><u>Assessment:</u> Beard vegetation association 4; Medium woodland; Marri and Wandoo has been mapped across the application area. Approximately 284,100 hectares of Beard vegetation association 4 remains, or 26.95 per cent of its original extent. Within the Jarrah Forest IBRA bioregion (JAF) approximately 277,085 hectares of vegetation association 4 remains, or 27.09 per cent of its original extent. Within the local area of a 10 kilometre radius of the application area approximately 7,390 hectares of mapped native vegetation remains, or 23.35 per cent of its original extent. The extent of native vegetation remaining within the local area is inconsistent with the national objectives and targets for biodiversity conservation in Australia; however, within the Shire of Cranbrook, 33.12 per cent of vegetation association 4 remains.</p>	May be at variance	Yes Section 3.2.3
<p><u>Principle (h):</u> <i>“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.”</i></p> <p><u>Assessment:</u> Given the distance to the nearest conservation area (9.1 km) (Appendix C.1), the proposed clearing is not considered likely to have an impact on the environmental values of adjacent and/or nearby conservation areas.</p>	Is not likely to be at variance	No
<b>Environmental values: land and water resources</b>		
<p><u>Principle (f):</u> <i>“Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.”</i></p> <p><u>Assessment:</u> Given the close proximity of the Frankland River (57m) to one of the proposed clearing areas and the presence of riparian vegetation (<i>Eucalyptus rudis</i>) within the application area, the native vegetation is considered to be growing in association with a watercourse.</p>	Is at variance	Yes Section 3.2.4
<p><u>Principle (g):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.”</i></p> <p><u>Assessment:</u> The mapped soils are moderately / highly susceptible to wind erosion (Appendix C.1). Noting the small extent, location adjacent to existing cleared areas and that the proposed clearing is over four separate areas the proposed clearing is not likely to cause appreciable land degradation.</p>	Is not likely to be at variance	No
<p><u>Principle (i):</u> <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.”</i></p> <p><u>Assessment:</u> Given the distance to the nearest watercourse/wetland, Frankland River (57m) (Appendix C.1) and the relatively small areas proposed to be cleared, the clearing is not considered likely to impact the quality of surface or underground water.</p>	Is not likely to be at variance	No

Assessment against the Clearing Principles	Variance level	Is further consideration required?
<p><u>Principle (j)</u>: <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.”</i></p> <p><u>Assessment</u>: There are no mapped annual exceedance probability (AEP) floodplains within the vicinity of the application area. Area A is located within a medium (M1) risk flood risk area whereby 10% to 30% of the mapped unit has a moderate to high flood risk. However, mapped soils and topographic contours in the surrounding area do not indicate the proposed clearing is likely to contribute to increased incidence or intensity of flooding, or contribute to water-logging.</p>	Is not likely to be at variance	No

### Appendix E – Vegetation condition rating scale

Vegetation condition is a rating given to a defined area of vegetation to categorise and rank disturbance related to human activities. The rating refers to the degree of change in the vegetation structure, density and species present in relation to undisturbed vegetation of the same type. The degree of disturbance impacts upon the vegetation’s ability to regenerate. Disturbance at a site can be a cumulative effect from a number of interacting disturbance types.

#### Measuring Vegetation Condition for the South West and Interzone Botanical Province (Keighery, 1994)

Condition	Description
Pristine	Pristine or nearly so, no obvious signs of disturbance.
Excellent	Vegetation structure intact, with disturbance affecting individual species; weeds are non-aggressive species.
Very Good	Vegetation structure altered, with obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and/or grazing.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and/or grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and/or grazing.
Completely Degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as ‘parkland cleared’ with the flora comprising weed or crop species with isolated native trees or shrubs.

**F.1 Flora and vegetation (Ecoedge, 2020)**

**F.1.1 Executive Summary (Ecoedge, 2020)**

**Executive Summary**

Ecoedge was engaged by the Shire of Cranbrook to undertake a Reconnaissance and Targeted Flora and Vegetation Survey of approximately 0.58 hectares of road reserve located in four separate locations, one on Wingebellup Road and three along the Kojonup Frankland Road. Area 1 is approximately 6.5 km west of the town of Frankland River.

The flora and vegetation survey was undertaken on the 30 September 2020 in accordance with the Environmental Protection Authority (EPA) Technical Guidance - Flora and Vegetation Surveys for Environmental Impact Assessment (EPA, 2016).

72 species of vascular flora (including 24 introduced species) were identified across the four areas

No Threatened flora, Priority flora or other flora of conservation significance were found.

One of the introduced species was the Declared Pest *Asparagus asparagoides* (Bridal creeper).

Seven vegetation units were described across the survey area, most of which is in a degraded condition due to the occurrence of the vegetation in road reserves in a predominantly agricultural area.

None of vegetation units meet the criteria of a State listed Priority Ecological Community (PEC) or the criteria of a State or Federally listed Threatened Ecological Community (TEC).

One Vegetation Association is mapped across the four Survey areas: Association 4 'medium woodland; marri & wandoo'. The current Statewide extent of this association (at 26.95 %) is below the Commonwealth government's 30% retention threshold, with 14.48% represented within the DBCA estate. The current extent of this association within the Shire of Cranbrook exceeds the target at 33.12%.

Vegetation Units A, B and C are regarded as having vegetation associated with and dependant on the Frankland River waterway. Vegetation Units E and F which is dependent on and associated with an ephemeral wetland in a depression at the base of a hill. Vegetation associated with waterways and wetlands is specially protected under the EP Act.

The survey areas 1, 2 and 3 form part of a network of connected native vegetation associated with the Frankland River in a predominantly cleared agricultural landscape.

There are no Environmentally Sensitive Areas within or in close proximity to the survey area.



## F.1.2 Vegetation Units A to G (Ecoedge, 2020)

### 3.2.1 Survey area 1 - Wingellebup Road

Survey area 1 comprised of two vegetation units, Vegetation Unit A and Vegetation Unit B.



Figure 10. Vegetation Unit A, looking west from the middle of the survey area.

#### 3.2.1.1 Vegetation Unit A

Mid Open woodland of *Eucalyptus rudis* subsp. *rudis* over isolated clumps of *Melaleuca viminea* mid-shrubland over a sparse sedgeland of *Lepidosperma leptostachyum* and an open forbland of *\*Ursinia anthemoides*, *\*Romulea rosea* and *Kennedia prostrata* and a sparse grassland of *\*Briza maxima*, *\*Lolium perenne* and *Neurachne alopecuroides* over a gravelly red-brown loam (Degraded – Completely Degraded).



Figure 11. Vegetation Unit B, looking South East from the middle of the survey area.

#### 3.2.1.2 Vegetation Unit B

Mid open woodland of *Eucalyptus rudis* subsp. *rudis* over a low woodland of *\*Acacia dealbata* over a grassland of *\*Avena barbata*, *\*Briza maxima* and *\*Lolium perenne* and an open forbland of *Ursinia anthemoides* over a gravelly red-brown loam (Completely Degraded).



Figure 12. Vegetation Unit C, looking NW from near the southern boundary of the survey area.

#### 3.2.2.1 Vegetation Unit C

*Eucalyptus wandoo*, *E. rudis* subsp. *rudis* woodland over sparse *Melaleuca raphiophylla* and *Acacia saligna* trees over *Allocasuarina lehmanniana* subsp. *lehmanniana*, *Hakea prostrata* Sparse mid shrubland over a low shrubland of *Hibbertia pilosa*, *Dianella divaricata* with occasional *H. amplexicaulis* and *Conostylis aculeata* subsp. *aculeata* over a sparse *Desmocladius asper* sedgeland and \**Briza maxima*, *Austrostipa elegantissima*, *Neurachne alopecuroides* open grassland over gravelly red brown loam (Degraded – Good).



Figure 13. Vegetation Unit D, looking north west from near the middle of the survey area.

#### 3.2.2.2 Vegetation Unit D

*Eucalyptus wandoo*, with occasional *E. marginata* mid-woodland over a mid-shrubland of *Allocasuarina lehmanniana* subsp. *lehmanniana*, *Hakea prostrata*, *Kunzea glabrescens* and *Leptospermum erubescens* over a low-shrubland of *Gastrolobium praemorsum*, *Hypocalymma angustifolium*, *G. spinosum* and *Hibbertia pilosa* over a grassland of \**Briza maxima*, *B. minor* and *Neurachne alopecuroides* with isolated clumps of forbs including \**Ursinia anthemoides*, *Caesia micrantha*, and *Sowerbaea laxiflora* on gravelly red brown loam (Degraded – Good).



Figure 14. Vegetation Unit E looking south to Unit F, from near the northern edge of the survey area.

#### 3.2.3.1 *Vegetation Unit E*

*Eucalyptus rudis* subsp. *rudis* woodland over *Ehrharta longiflora* closed grassland with a sparse forbland of *Trifolium* spp., *Raphanus raphanistrum*, *Hibbertia pilosa* and *Monadenia bracteata* and isolated clumps of the sedge *Lepidosperma leptostachyum* over brown loam (Completely Degraded - Degraded).



Figure 15. Vegetation Unit F looking north from the middle of the survey area.

#### 3.2.3.2 *Vegetation Unit F*

*Eucalyptus rudis* subsp. *rudis* woodland over a mid-shrubland of *Kunzea glabrescens* and *Melaleuca blaeriifolia* over an open sedgeland of *Cyathochaeta avenacea* and *Chorizandra enodis* and a grassland of *Ehrharta longiflora* and *Briza maxima* with isolated clumps of the forbs \**Rumex crispus*, *Caesia micrantha*, *Stylidium crassifolium* and *Sowerbaea laxiflora* over brown clay (Completely Degraded – Good).

Survey area 4 comprised of one vegetation unit, Vegetation Unit G. The dominant tree species associated with this unit is the non-native *Eucalyptus botryoides* which has been planted into the road reserve. It is from eastern states of Australia.



Figure 16. Vegetation Unit G, looking south east from the northern end of the survey area.



Figure 17. Vegetation Unit G, looking north west from near the southern edge of the survey area.

#### 3.2.4.1 Vegetation Unit G

*Eucalyptus botryoides* over introduced grassland of *Ehrharta longiflora*, *Avena barbata*, *Briza maxima* and *Paspalum dilatatum* (in wetter areas) with isolated clumps of *Allocasuarina lehmanniana* subsp. *lehmanniana*, *Hakea lissocarpa* and *Xanthorrhoea preissii* mid shrubland over isolated low shrubs of *Acacia pulchella* and isolated clumps of the forbs *Dianella divaricata* and *Conostylis aculeata* subsp. *aculeata* and isolated clumps of the sedges *Lepidosperma squamatum* and *Tetraria capillaris* on gravelly red brown loam (Completely Degraded to Good).

### F.1.3 Vegetation units and condition (Ecoedge 2020)

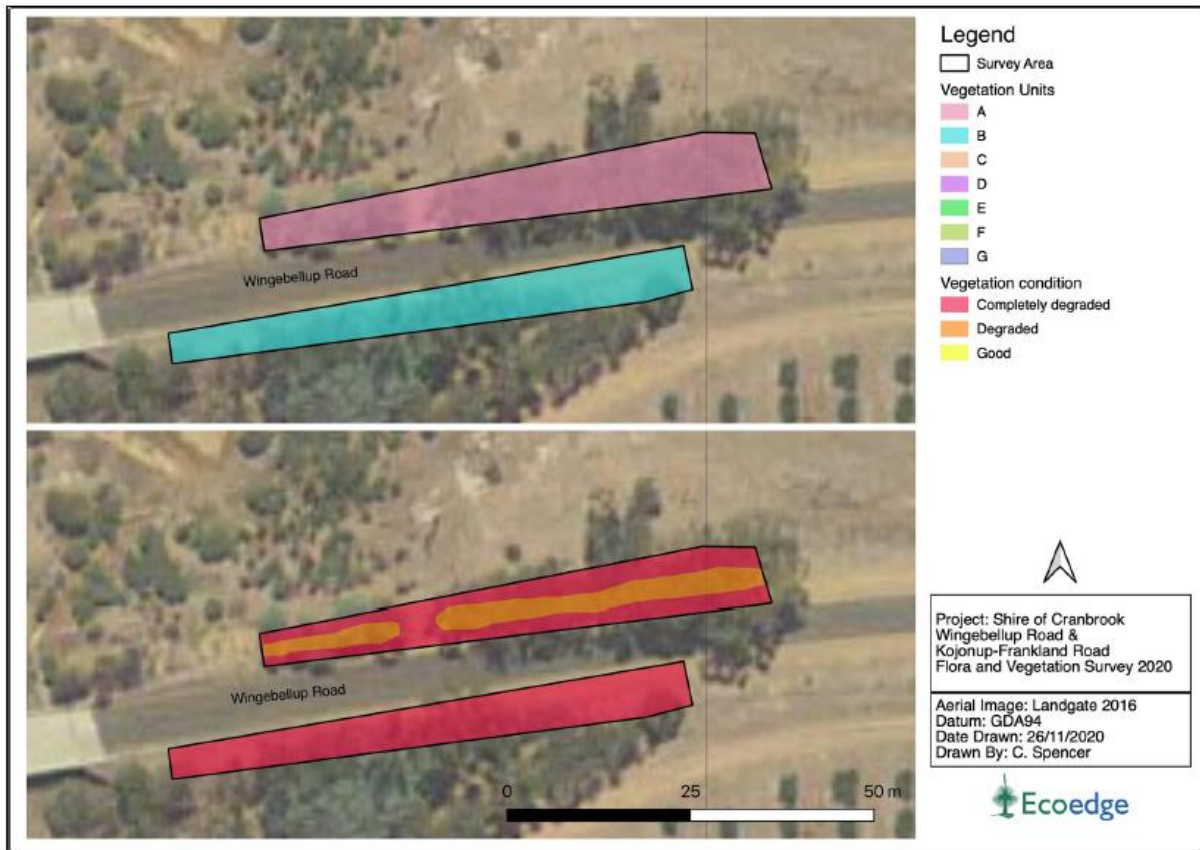


Figure 18. Survey area 1 - vegetation units and vegetation condition.



Figure 19. Survey area 2 - vegetation units and vegetation condition.

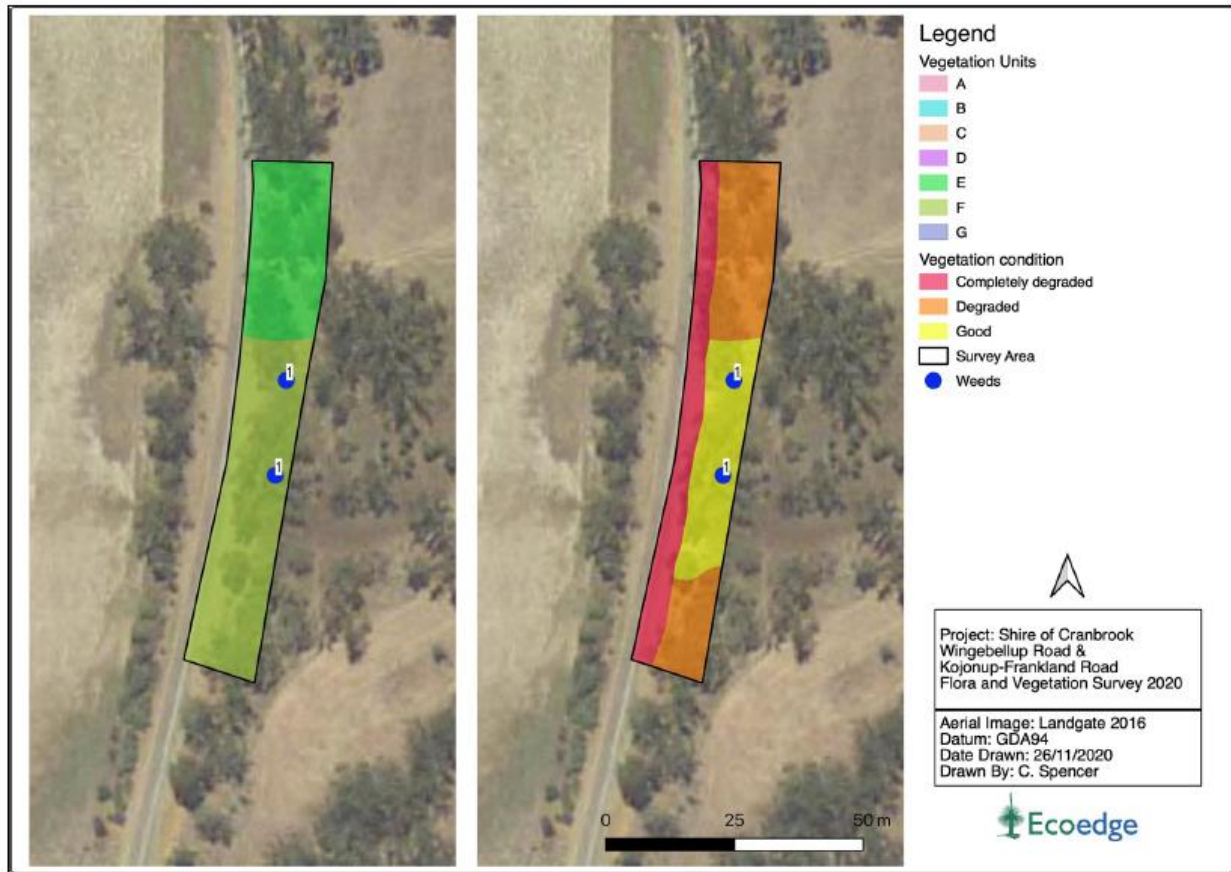


Figure 20. Survey area 3 - vegetation units and vegetation condition.



Figure 21. Survey area 4 - vegetation units and vegetation condition.

### F.1.4 Wheatbelt Woodlands TEC mapped distribution (Ecoedge 2020)

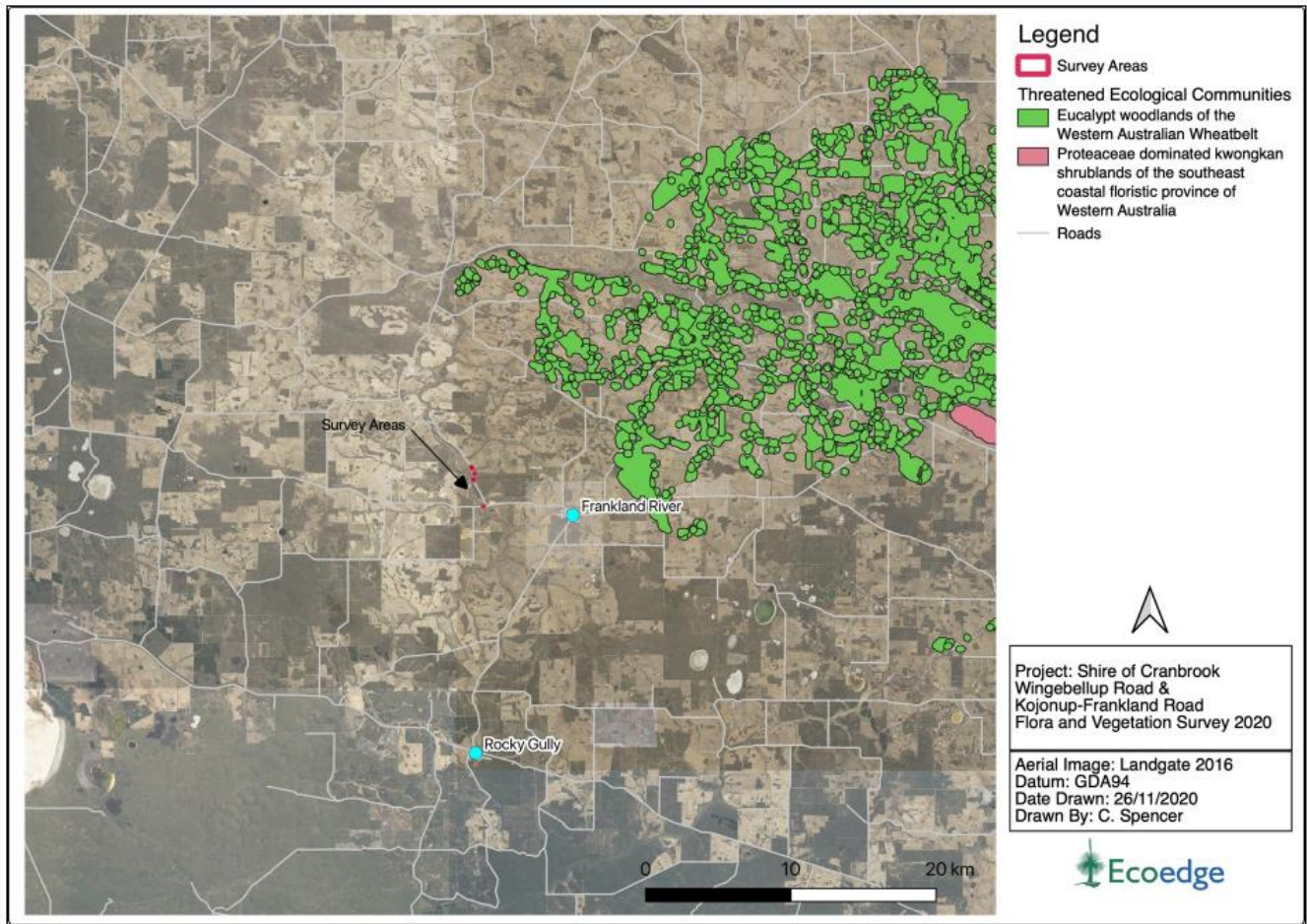


Figure 7. Location of TECs in proximity to the survey area (DBCA 2020).

## F.1.5 Significant flora (Ecoedge, 2020)

Table 4. Threatened and Priority List flora known to occur within 30 km of the survey area (DBCA 2020c, 2020d; DAWE 2020b.)

Species	Cons Status*	Flowering	Description and Habitat	*Likelihood
<i>Reedia spathacea</i>	T (CR)	Nov-Dec or Jan	Robust, tufted perennial, grass-like or herb (sedge), 2-4 m high, clumps 1.5-2 m wide. Fl. brown. Peaty sand. Swamps, river edges.	Unlikely
<i>Caladenia dorrienii</i>	T (EN)	Sep-Nov	Tuberous, perennial, herb, 0.1-0.2 m high. Fl. white-cream-yellow. Clayey loam. Moist sites adjacent to rivers and seasonal creeks.	Possible
<i>Adenanthos pungens subsp. pungens</i>	T (EN)	Aug - Nov	Erect shrub, 0.5-3 m high. Fl. pink/red. White/grey or pink sand, rocky soils, gypsum. Sand dunes, hillsides.	Unlikely
<i>Bossiaea reptans</i>	T (EN)	Oct	Subshrub to 20 cm high, consisting of small, compact individuals or forming extensive colonies 1-10 m diam. Fl. Yellow red pea. Low rises adjacent to winter-wet depressions or subuded watercourses in Jarrah ( <i>Eucalyptus marginata</i> ) and Marri ( <i>Corymbia calophylla</i> ) woodland.	Possible
<i>Conostylis misera</i>	T (EN)	Oct - Nov	Rhizomatous, tufted perennial, grass-like or herb, 0.05-0.18 m high. Fl. yellow. White or grey sand, sandy loam. Winter-wet flats.	Possible
<i>Grevillea acropogon</i>	T (EN)	Jun-Sept	Prostrate to erect shrub to 1.8m high. Fl. Red. Shallow soils over ironstone on the margins of a seasonally inundated area.	Unlikely
<i>Gastrolobium lehmannii</i>	T (VU)	Sep - Oct	Erect, domed shrub, to 1.5 m high. Fl. orange-yellow-red-purple. Red clay, laterite. Low hilltop of breakaway.	Unlikely
<i>Myoporum cordifolium</i>	T (VU)	Jul - Nov	Spindly, erect shrub, 0.3-0.8 m high. Fl. white/white-pink. Sandy loam or clay loam. Flat plains.	Possible
<i>Caladenia christineae</i>	T (VU)	Sep-Nov	Tuberous, perennial, herb, 0.25-0.4 m high. Fl. white-cream-yellow. Sand, clayey loam, laterite. Margins of winter-wet flats, swamps, & freshwater lakes.	Possible
<i>Caladenia harringtoniae</i>	T (VU)	Oct-Nov	Tuberous, perennial, herb, 0.2-0.4 m high. Fl. pink. Sandy loam. Winter-wet flats, margins of lakes, creeklines, granite outcrops.	Possible
<i>Caladenia validinervia</i>	P1	Sep-Oct	Tuberous, perennial, herb, single erect, hairy leaf and up to three greenish to creamy white flowers with red stripes on the sepals and petals. Only known from an area between Rocky Gully and Collie. Grows in jarrah and marri woodland.	Unlikely
<i>Senecio gilbertii</i>	P1	Sep-Nov	Erect, slender perennial, herb, to 1.5 m high. Fl. yellow. Peaty sand. Swamps, slopes.	Possible

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Species	Cons Status*	Flowering	Description and Habitat	*Likelihood
<i>Tetradia sp. Warren (M. McCallum Webster 23/2/1979)</i>	P1		Only limited information available.	Possible
<i>Xanthoparmelia sammyi</i>	P1	Ju	Species of fungi in the family Parmeliaceae. Limited information available.	Possible
<i>Adenanthos linearis</i>	P2	Jan - Mar	Prostrate shrub, 0.15-0.6 m high. Fl. yellow & pink/cream & pink. Sandy soils, gravel.	Unlikely
<i>Andersonia hammersleyana</i>	P2	Aug - Oct	Erect to straggling shrub, 0.3-0.8 m high. Fl. blue/blue & white. Granitic sand, gravelly clay loam. Granite outcrops, slopes.	Unlikely
<i>Astartea sp. Lake Muir (B.L. Rye 230128 &amp; R.W. Hearn)</i>	P2		Shrub, Fl. Pink/white, limited information available.	Possible
<i>Caladenia erythrochila</i>	P2	Sep-Oct	Tuberous, perennial, herb, 0.2-0.25 m high. Fl. red-brown-purple. Grey sand over laterite. Well-drained lateritic soils under scattered jarrah.	Unlikely
<i>Caladenia perangusta</i>	P2	Aug - Oct	Tuberous, perennial, herb, 0.17-0.37 m high. Variably cream, creamy yellow, pale yellow or red flowers. Lateritic and sandy clay soils in open <i>Eucalyptus wandoo</i> woodland, favour open situations above seasonal drainage lines and streams.	Possible
<i>Caladenia startiorum</i>	P2	Sep - Oct	Tuberous, perennial, herb, 0.2-0.6 m high. Fl. pink & white. Clay loam. Winter-wet swamps.	Possible
<i>Calothamnus scabridus</i>	P2	Oct-Dec	Erect shrub, to 1.5 m high. Terete scabrid leaves. Fl. Pale to bright red. Granitic loam.	Unlikely
<i>Eryngium sp. Lake Muir (E. Wittwer 2293)</i>	P2	Jan	Near prostrate herb. Fl. white. Black peaty silty soils. Winter-wet swamps.	Possible
<i>Euphrasia scabra</i>	P2	Oct	Erect annual, herb, (0.085-)0.15-0.35(-0.5) m high. Fl. yellow.	Possible
<i>Gratiola pedunculata</i>	P2	Sep-Nov	Erect to decumbent perennial herb 13-50 cm high. Damp areas.	Possible
<i>Hibbertia sejuncta</i>	P2	Aug - Oct	Low-growing shrubs to 25 cm high, Fl. Yellow, Stamens. 11, all around the gynoecium. Winter-damp areas on gentle slopes adjacent to minor drainage lines and run-on areas, in grey sand beneath low, open jarrah forest.	Possible
<i>Logania sylvicola</i>	P2	Aug-Sep	Spreading, compact shrub to 40 cm x 50 cm. Inflorescence more or less pendant. Flowers cream. Mid slopes. Dry brown gravelly, sandy loam over laterite.	Unlikely
<i>Melaleuca ordinifolia</i>	P2	Aug - Oct	Compact, spreading shrub, 0.3-1.5 m high. Fl. white-cream. Sandy loam or clay.	Possible

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Species	Cons Status*	Flowering	Description and Habitat	*Likelihood
<i>Montia australasica</i>	P2	Oct - Jan	Terrestrial or aquatic perennial herb, rooting from leaf nodes, terrestrial plants densely tufted and carpeting, aquatics loose and open. Fl. White - pale pink. Wet soil in permanent or winter wet swamps or aquatic in slow moving watercourses.	Possible
<i>Pentapogon quadrifidus</i> var. <i>quadrifidus</i>	P2		Annual or perennial, grass-like or herb, 0.3-0.6 m high, panicles to 20 cm, glumes usually 6.5-10 mm long. Fl. green/purple. Clay. Open winter wet flat in forest.	Possible
<i>Schoenus loliaceus</i>	P2	Aug-Nov	Annual, grass-like or herb (sedge), 0.03-0.06 m high. Sandy soils. Winter-wet depressions.	Possible
<i>Spyridium riparium</i>	P2	Jul to Oct	Erect shrub, 0.8-1.5 m high. Fl. white/cream. Sandy or gravelly soils over laterite. Riverbanks, slopes.	Possible
<i>Stylidium squamellosum</i>	P2	Oct-Nov	Caespitose perennial, herb, 0.12-0.35 m high, leaves tufted, linear to narrowly oblanceolate, 1-5 cm long, 0.8-2.5 mm wide, apex subacute, margin entire, glandular. Scape glandular throughout. Inflorescence racemose. Fl. yellow. Brown to red-brown clay loam. Winter-wet habitats and depressions, open woodland, shrubland.	Possible
<i>Synaphea</i> sp. <i>Kwornicup</i> (D. Trenowden 429)	P2		Only limited information available.	Possible
<i>Thysanotus</i> sp. <i>Badgingarra</i> (E.A. Griffin 2511)	P2	Dec	Perennial, herb (with tuberous roots), ca 0.35 m high. Fl. blue. Grey sand with lateritic gravel.	Unlikely
<i>Thysanotus unicipensis</i>	P2	Oct-Dec	Erect perennial dwarf shrub, height to 15 cm, width to 11 cm; flowers purple. Dry lateritic and grey sandy soils in moderately sunny places within Jarrah/Marri forests.	Unlikely
<i>Acacia parkerae</i>	P3	Sept-Oct	Prostrate, intricately branched, often sprawling shrub to c. 1 m across, branches sometimes erect and reaching c. 0.2 m high. Fl. Yellow, globular. Brown loam, clay or clay loam (normally not lateritic), typically in association with <i>Eucalyptus wandoo</i> .	Possible
<i>Andersonia auriculata</i>	P3	Apr-Oct	Erect or spreading shrub, 0.1-0.3(-0.5) m high. Fl. white & blue. Grey or peaty sand, often over laterite. Swampy areas, granite outcrops.	Unlikely
<i>Calytrix pulchella</i>	P3	Aug-Nov	Shrub, 0.3-0.7(-1) m high. Fl. pink. Grey or white sand over laterite. Ridges, flats.	Unlikely

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Species	Cons Status*	Flowering	Description and Habitat	*Likelihood
<i>Chamaesilla gibsonii</i>	P3	Sep	Clumped tuberous, herb. Fl. blue. Clay to sandy clay. Winter-wet flats, shallow water-filled claypans.	Possible
<i>Cryptandra arbutiflora</i> var. <i>pygmaea</i>	P3	Aug-Nov	Low & spreading shrub, 0.05-0.2 m high. Fl. white. Shallow clay. Around granite outcrops.	Unlikely
<i>Cymbonotus preissianus</i>	P3	Aug - Sep	Stemless perennial, herb. Fl. yellow.	Possible
<i>Eryngium</i> sp. <i>ferox</i>	P3	Oct, Nov	Only limited information available.	Possible
<i>Kunzea micrantha</i> subsp. <i>hirtiflora</i>	P3	Sep	Spindly shrub, 0.6-1 m high. Fl. pink/white/purple. In temporary marshes, often partly submerged.	Unlikely
<i>Melaleuca pritzelii</i>	P3	Aug-Oct or Dec	Shrub, 0.7-1.6 m high. Fl. cream. Sandy or clayey soils. Swampy areas.	Possible
<i>Stylidium rhipidium</i>	P3	Oct-Nov	Slender annual, herb, ca 0.05 m high. Fl. white. Sandy soils. Wet creek flats, swamps, granite outcrops.	Possible
<i>Stylidium roseanum</i>	P3	Oct	Diminutive, short-lived annual, herb, 0.015-0.03 m high. Fl. red-white. Swamps.	Possible
<i>Synaphea decumbens</i>	P3	Sep-Oct	Decumbent shrub. Fl. yellow. Sand over laterite.	Unlikely
<i>Synaphea hians</i>	P3	Jul-Nov	Prostrate or decumbent shrub, 0.15-0.6 m high, to 1 m wide. Fl. Yellow. Sandy soils. Rises.	Unlikely
<i>Synaphea otio stigma</i>	P3	Jul - Oct	Erect shrub, 0.8-1.5 m high. Fl. white/cream. Sandy or gravelly soils over laterite. Riverbanks, slopes.	Possible
<i>Tetradlea exasperata</i>	P3	Sep-Oct	Few-branched shrub (subshrub), 0.1-0.35 m high. Fl. pink, purple. White-grey sand, sandy loam with gravel, orange-brown gravelly loam.	Unlikely
<i>Wurmbea</i> sp. <i>Cranbrook</i> (A.R. Annels 3819)	P3	Sep	Cormous, perennial, herb, ca 0.25 m high. Fl. white. Valley floor.	Possible
<i>Stylidium lepidum</i>	P3	Oct-Nov	Spreading, rosetted perennial, herb, ca 0.05 m high, forming densely packed colonies. Fl. pink, orange. Gravelly sand or loam, clay. Winter-wet depressions.	Possible
<i>Banksia acuminata</i>	P4		Prostrate, lignotuberous shrub, to 0.2 m high, to 1 m wide. Fl. yellow-orange, Oct. Gravelly soils also sand in Kwongan.	Unlikely
<i>Banksia porrecta</i>	P4	Jul - Aug	Prostrate, sprawling, mat-forming, lignotuberous shrub, 0.2-0.35 m high, 0.6-4 m wide. Fl. white-cream. White/grey sand, sandy loam.	Unlikely

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Species	Cons Status*	Flowering	Description and Habitat	*Likelihood
<i>Caladenia integra</i>	P4	Sep - Oct	Tuberous, perennial, herb, 0.2-0.5 m high. Fl. green & red. Clayey loam. Granite outcrops, rocky slopes.	Unlikely
<i>Eucalyptus brevistylis</i>	P4	Jan-Feb or Oct-Dec	Tree, 20-50 m high, bark fibrous to stringy. Fl. white. Sandy loam, sand.	Unlikely
<i>Lasiopetalum cardiophyllum</i>	P4	Aug-Jan	Erect, multi-stemmed shrub, 0.2–0.5 m high. Fl. pink. Lateritic gravelly soils, sandy clay. Flats, hillslopes.	Possible
<i>Microtis quadrata</i>	P4	Dec-Jan	Slender erect annual herb, 0.3 - 0.8 m high, up to 100 yellowish-green flowers 2.5 - 3mm across. Clay based coastal flats.	Unlikely
<i>Ornduffia submersa</i>	P4	Sep-Oct	Tuberous emergent aquatic perennial dwarf shrub, height to 35 cm; flowers white; leaves floating on surface of water. Clay-based ponds and swamps (semi-aquatic).	Unlikely
<i>Schoenus natans</i>	P4	Oct	Aquatic annual, grass-like or herb (sedge), 0.3 m high. Fl. brown. Winter-wet depressions.	Unlikely
<i>Trithuria australis</i>	P4	Sep- Nov	Small aquatic herb. Ponds, pools.	Unlikely
<i>Xanthosia eichleri</i>	P4	Oct-Nov	Erect, procumbent or decumbent shrub (subshrub), 0.05-0.25 m high, leaves simple, cuneate; umbels simple; petals shorter than sepals. Fl. white-cream. Grey sand over granite, sandy loam. Granite outcrops, jarrah/marri woodland.	Unlikely
<i>Eucalyptus erectifolia</i>	P4	Mar - May	(Mallee), 1-4 m high, bark smooth, grey. Fl. white. White sand, sandy loam & gravel. Hillslopes, sandplains.	Unlikely

Note: The BC Act Conservation Status is shown, EPBC Act status, where relevant, is in brackets.

\*

**Likely** – Known to occur within one kilometres of the survey area with suitable habitat within the survey area.

**Possible** – Suitable habitat within the survey area.

**Unlikely** – No suitable habitat existing within the survey area.

**Unknown** – Data deficient.

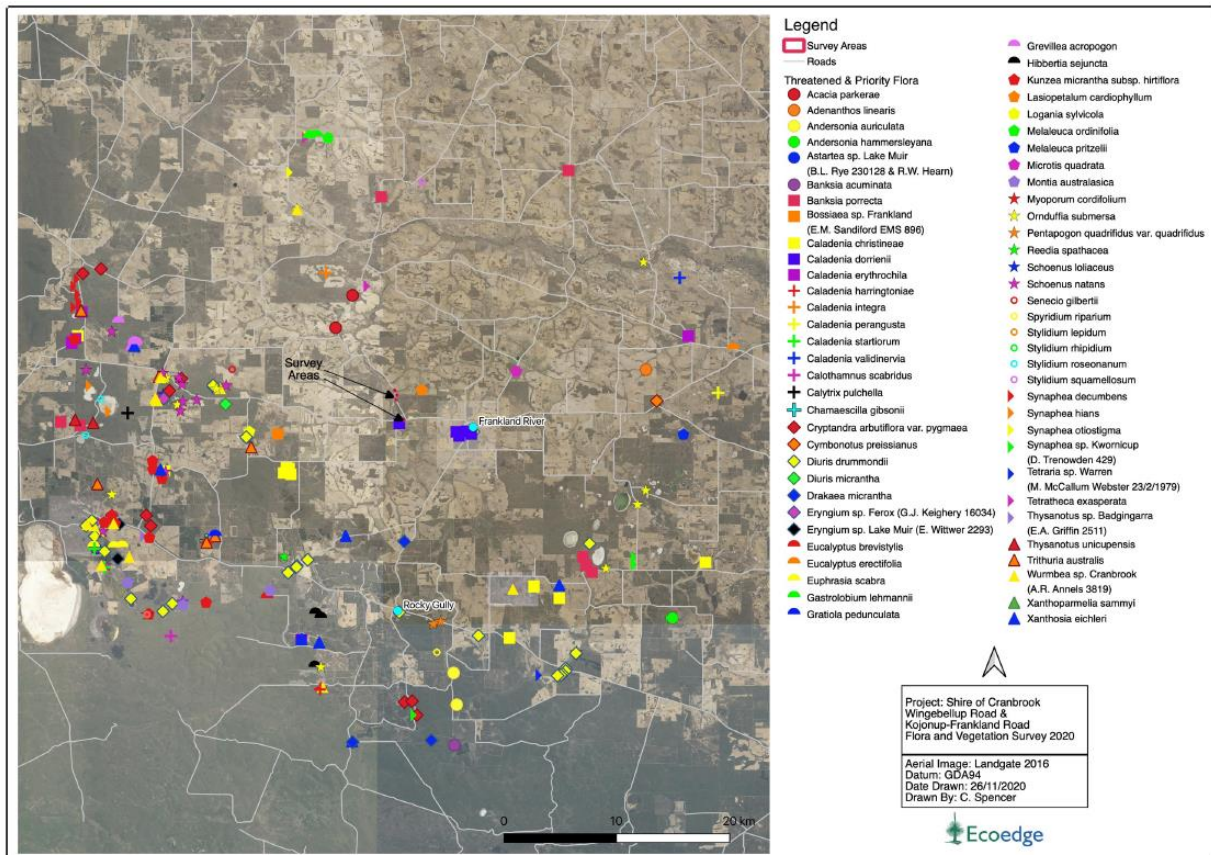


Figure 8. Location of Threatened and Priority flora mapped within 30 km of the survey area (DBCA, 2020c).

### SUMMARY

This report details the results of a habitat tree assessment carried out over several sections of the Frankland-Kojonup Road and Wingebellup Road, in the Shire of Cranbrook (the Shire)..

The Shire is seeking permission to clear up to 0.583 hectares of native vegetation along the road reserves from the Department of Water and Environmental Regulation (DWER) and have made application for a clearing permit (Ref: CPS 8926/1).

An initial inspection of the area by DWER identified the presence of potential black cockatoo breeding habitat and as a consequence they have requested a black cockatoo habitat tree survey be undertaken (DWER 2020). The results of this survey are presented here.

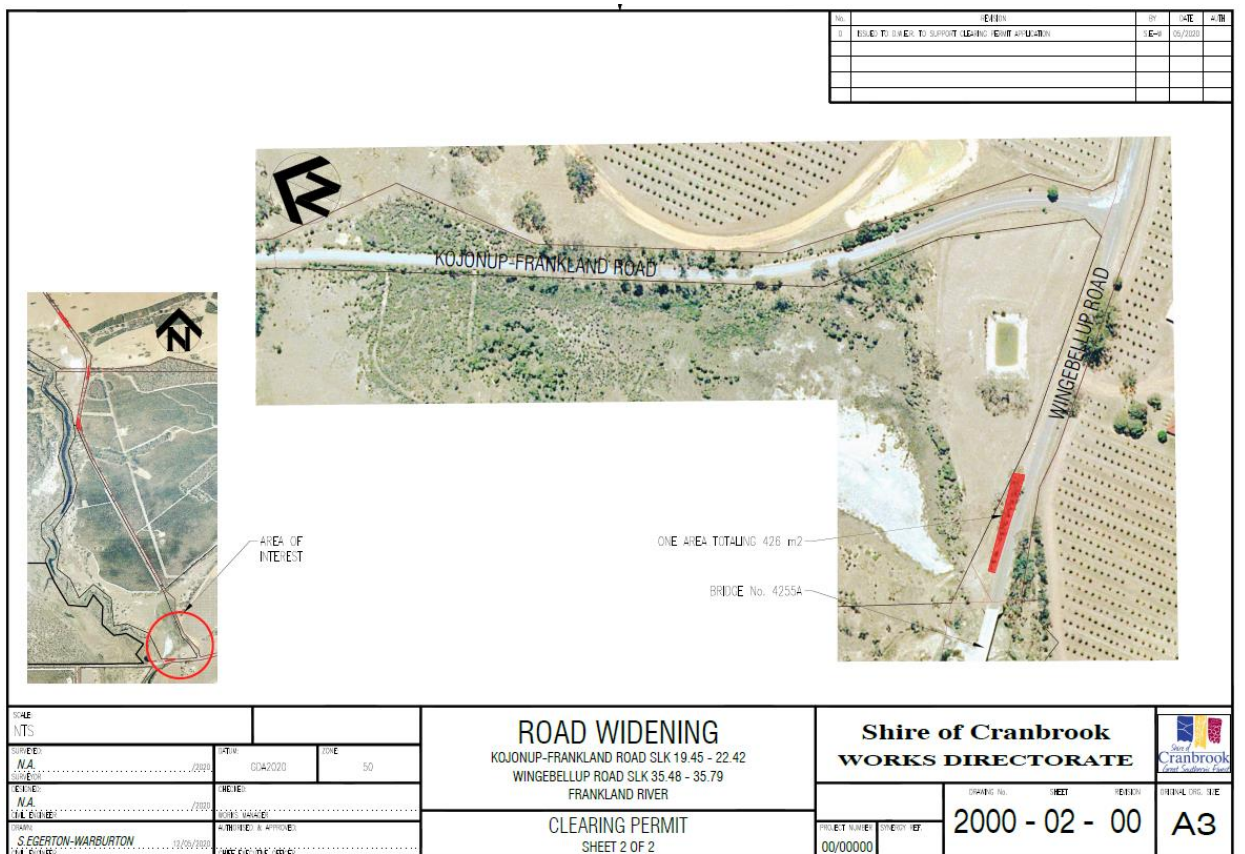
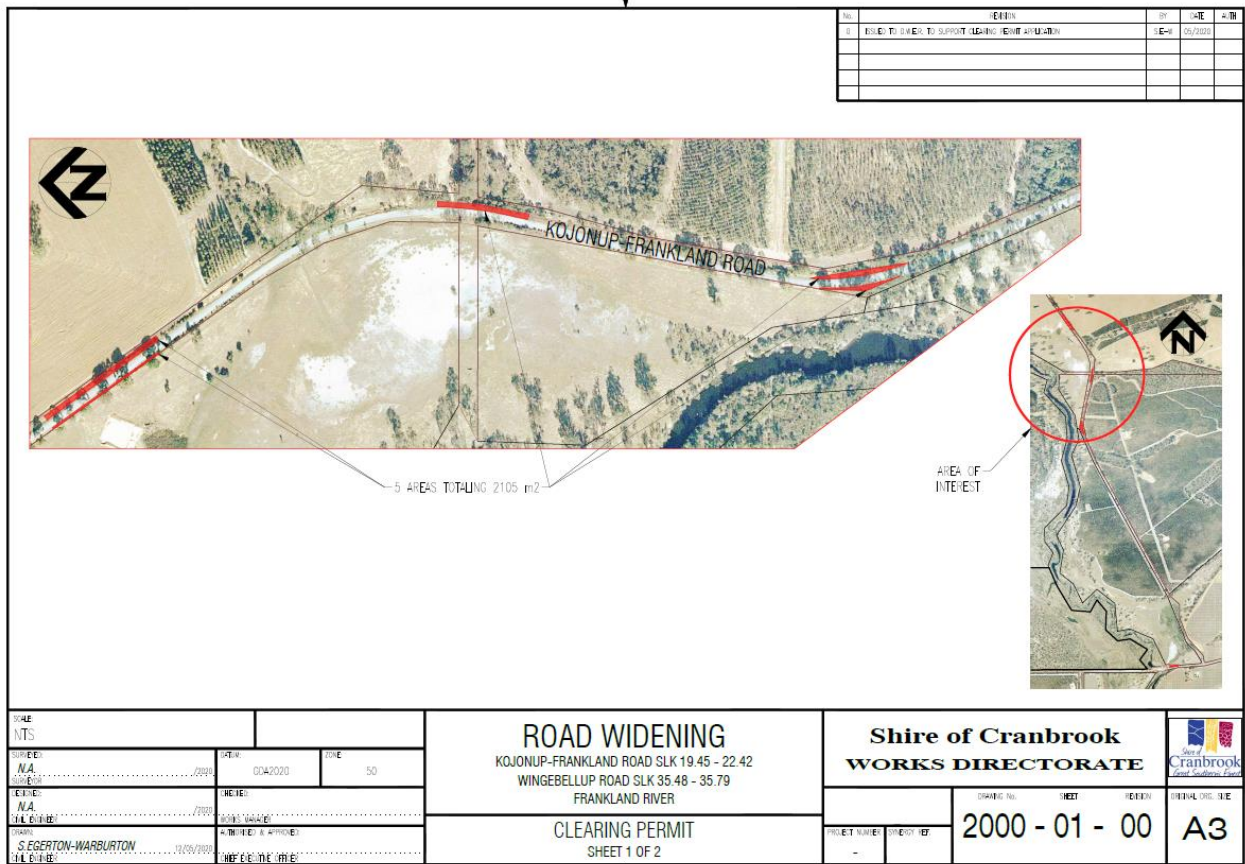
An inspection of the permit area was carried out by Greg Harewood (Zoologist - 17 years' experience) on the 20 August 2020. The permit area was found to contain 24 "habitat trees" (i.e. DBH  $\geq$ 50cm/ $\geq$ 30cm for wandoo).

None of these trees were identified as containing hollows suitable for, or in use by black cockatoos. In addition, no black cockatoo foraging or roosting activity was observed

Given that none of the trees within the permit area appear to contain hollows of a size suitable for black cockatoos or show any signs of use by black cockatoos it is the Authors opinion that their removal will have no direct impact on any of the three species of black cockatoo known to frequent the general area.

This report should be forwarded to DWER for their consideration.

### F.3 Engineering drawings (Shire Cranbrook, 2020)



**F.4 Photographs of the application area (Shire Cranbrook, 2020)**

Kojonup-Frankland Road:









Wingebellup Rd:





## Appendix G – References and databases

### G.1 References

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## **G.2 GIS databases**

Publicly available GIS Databases used (sourced from [www.data.wa.gov.au](http://www.data.wa.gov.au)):

- Aboriginal Heritage Places (DPLH-001)
- Cadastre Address (LGATE-002)
- Contours (DPIRD-073)
- DBCA – Lands of Interest (DBCA-012)
- DBCA Legislated Lands and Waters (DBCA-011)
- Directory of Important Wetlands in Australia – Western Australia (DBCA-045)
- Environmentally Sensitive Areas (DWER-046)
- Flood Risk (DPIRD-007)
- Groundwater Salinity Statewide (DWER-026)
- IBRA Vegetation Statistics
- Local Planning Scheme – Zones and Reserves (DPLH-071)
- Regional Parks (DBCA-026)
- Soil and Landscape Mapping – Best Available

Restricted GIS Databases used:

- ICMS (Incident Complaints Management System) – Points and Polygons
- Threatened Flora (TPFL)
- Threatened Flora (WAHerb)
- Threatened Fauna
- Threatened Ecological Communities and Priority Ecological Communities
- Threatened Ecological Communities and Priority Ecological Communities (Buffers)