

FLORA AND VEGETATION SURVEY

Nanekine Road Reserve, Canna

January 2025



ENVIRONMENTAL SITE ASSESSMENT: NANEKINE ROAD RESERVE, CANNA

The survey was undertaken on the lands of the Wujak people, and we wish to acknowledge them as Traditional Owners. We would also like to pay our respects to their Elders, past, present, and emerging.

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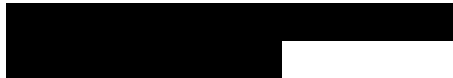


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1.0 Introduction

A flora and vegetation survey was conducted on 17 December 2024 within the Nanekine Road reserve in Canna, covering the section between SLK 0.27 to 2.79 totalling 2.353 ha (Figure 1). The assessment was required to clarify the type and condition of the vegetation in the area for Native Vegetation Clearing Permit CPS 10796/1.

1.1 Scope of work

The scope of work involved conducting a site assessment in early summer 2024. The assessment included:

- Reconnaissance flora and vegetation survey to identify the vegetation types and conditions
- Brief memo detailing the results of the survey
- Figures identifying the vegetation types and conditions present.

2.0 Methodology

2.1 Reconnaissance flora and vegetation assessment

The reconnaissance survey was undertaken to identify the flora and vegetation values and any habitat for significant flora and vegetation. Principal Botanist ██████████ conducted the assessment in the Summer (December 2024) and followed the methods outlined in the EPA Technical Guide—Flora and Vegetation Surveys for Environmental Impact Assessment (EPA 2016).

The survey area was extended at least 100 m on either side of SLK 0.27 to 2.79, resulting in a total survey area of 3.72 ha. The assessment involved:

- Mapping the vegetation types and condition present
- Compiling an inventory of flora species, including introduced species and Weeds of National Significance (WONS) and Declared Pests listed under the Biosecurity and Agricultural Management Act 2007 (BAM Act).

The vegetation types were described using the National Vegetation Information System (NVIS) standard to level V (Commonwealth of Australia 2003), which describes the three traditional strata (upper, mid, and ground). Vegetation mapping was completed by using QGIS 3.8 software with aerial imagery and quadrat data used to define vegetation types.

Vegetation condition was mapped across the survey area and the condition rating used was based on the Keighery (1994) scale which is suitable for the South-West and Interzone Botanical Province in which the survey area occurs. The vegetation condition ratings relate to vegetation structure, the level of disturbance at each structural layer and the ability of the vegetation unit to regenerate (EPA 2016a). The vegetation condition scale is provided in Table 1.

TABLE 1 VEGETATION CONDITION RATINGS (KEIGHERY 1994)

Vegetation Condition	Description
Pristine	Pristine or nearly so, no obvious signs of disturbance or damage caused by human activities since European settlement.
Excellent	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species. Damage to trees caused by fire, the presence of non-aggressive weeds and occasional vehicle tracks.
Very Good	Vegetation structure altered and obvious signs of disturbance. Disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging, and grazing.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. Disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback, and grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. Disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds at high density, partial clearing, dieback, and 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 and shrubs.

3.0 Results

3.1 Flora and vegetation

The reconnaissance flora and vegetation survey was undertaken on 17th December 2024. During the survey, 32 flora species were recorded, with the majority (29 species) being native species. None of the recorded species are of conservation significance, including those listed as Threatened under either the Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) or the Western Australian *Biodiversity Conservation Act 2016* (BC Act), or are a listed Priority species. None of the recorded weed species were listed as a Declared Pest under the *Biosecurity and Agricultural Management Act 2007* (BAM Act) or a Weed of National Significance (WONS). The list of recorded species is provided in Appendix A, and the weed species is provided in Table 2.

TABLE 2 WEED SPECIES RECORDED WITHIN THE SITE



Family	Species	Common name	Form
Aizoaceae	<i>Mesembryanthemum nodiflorum</i>	Slender iceplant	Annual
Poaceae	<i>Avena barbata</i>	Bearded oat	Annual
	<i>Pentameris airoides</i>	False hairgrass	Annual

The survey area was significantly disturbed and primarily consisted of degraded remnant roadside vegetation, which had been heavily encroached upon by weeds from the surrounding paddocks. Two vegetation types were present across the site:

- VT1 – EIAaAf – Eucalyptus woodland
- VT2 – CgAcWa – Calothamnus shrubland

A summary of the vegetation types is provided in Table 3 and mapped in Figure 2.

TABLE 3 DESCRIPTION OF VEGETATION TYPES

Code	Description	Representative photograph
EIAaAf	<p><i>Eucalyptus loxophleba</i> low woodland over <i>Acacia acuminata</i> and <i>Grevillea obliquistigma</i> mid sparse shrubland over <i>Avena barbata</i> low tussock grassland</p> <p>Landform: undulating plains</p> <p>Area: 2.89ha, 78%</p>	
CgAcWa	<p><i>Calothamnus gilesii</i> tall sparse shrubland over <i>Allocasuarina campestris</i>, <i>Acacia acuminata</i>, and <i>Beaufortia</i> sp. mid sparse shrubland over <i>Waitzia acuminata</i> low sparse forbland</p> <p>Landform: Rocky gentle hills</p> <p>Area: 0.839 ha, 22%</p>	

3.2 Condition

The vegetation condition in the survey area varied from Good to Completely Degraded. Disturbance was primarily observed near the paddocks, where weeds, particularly Bearded Oats (*Avena barbata*), had encroached and become dominant in the understorey. However, several patches of remnant vegetation were located adjacent to the survey area. In these patches, weed cover was lower, and the vegetation structure was more intact (see Plate 1).



PLATE 1 SURVEY AREA ADJACENT TO REMNANT VEGETATION

The vegetation condition within the survey area is outlined in Table 4 and mapped in Figure 3.

TABLE 4 VEGETATION CONDITION CATEGORIES WITHIN THE SURVEY AREA

Condition category	Area (ha)	Percentage (%)
Good	1.42	38
Degraded	1.36	37
Completely Degraded	0.94	25
Total	3.72	100

4.0 Conclusion and recommendations

The survey of the Nankeen Road Reserve, Canna between SLK 0.27 to 2.79 was undertaken on 17th December. The survey consisted of disturbed remnant roadside vegetation. A summary of flora and vegetation values is provided below:

Flora:

- A total of 32 flora species recorded
- No Threatened flora species listed under the EPBC Act or BC Act
- No Priority flora species
- No recorded species occur outside their population range
- Three weed species recorded
- No Declared Pests listed under the BAM Act
- No WONS listed under the EPBC Act.

Vegetation:

- Two vegetation types present:
 - o VT1 – EIAaAf – Eucalyptus loxophleba woodland (2.89ha, 78%)
 - o VT2 – CgAcWa – Calothamnus gilesii shrubland (0.839ha, 22%)
- Three vegetation conditions present:
 - o Good – 1.42ha, 38%
 - o Degraded – 1.36ha, 37%
 - o Completely Degraded – 0.94ha, 25%.

The assessment is considered complete, and no further surveys are recommended.

References

Department of Biodiversity, Conservation and Attractions (2024). *Threatened and Priority Flora List*. DBCA, Kensington.

Department of Climate Change, Energy, the Environment and Water (2024). EPBC Protected Matters Search Tool, Canberra.

Environment Protection Authority, 2016a. *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment*. EPA, Western Australia.

Keighery, B.J., 1994. *Bushland Plant Survey: A Guide to Plant Community Survey for the Community*. Wildflower Society of WA (Inc.), Nedlands, Western Australia

Figures



Figure 1: Survey Area



0 250 500 m

GDA2020 - MGA Zone 50

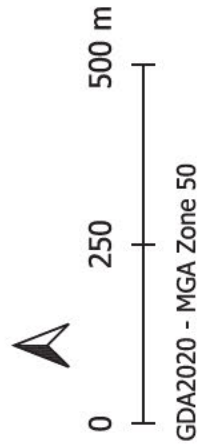
Legend

□ Survey Area





Figure 2: Vegetation Types

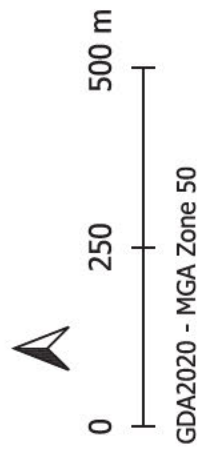


Legend

- Vegetation Type
- York gum over Melaleuca
 - Allocasuarina shrubland
 - Reveles



Figure 3: Vegetation Condition



Legend



Appendix A Species list

Family	Species	Vegetation Type		
		VT1- EIMaAf	VT2- CgAcWa	Opportunistic
Aizoaceae	<i>Mesembryanthemum nodiflorum</i>			X
Amaranthaceae	<i>Ptilotus obovatus</i>			X
	<i>Ptilotus polystachyus</i>	X		
Asteraceae	<i>Waitzia acuminata</i>	X	X	
Casuarinaceae	<i>Allocasuarina campestris</i>	X	X	
Chenopodiaceae	<i>Atriplex vesicaria</i>	X		
	<i>Enchylaena tomentosa</i>	X		
	<i>Maireana carnososa</i>			X
	<i>Rhagodia eremaea</i>	X		
Fabaceae	<i>Acacia acuminata</i>	X	X	
	<i>Acacia andrewsii</i>	X		
	<i>Acacia erinacea</i>			X
	<i>Senna artemisioides</i> subsp. <i>filifolia</i>	X		
Haloragaceae	<i>Glischrocaryon flavescens</i>		X	
Lauraceae	<i>Cassytha pomiformis</i>		X	
Malvaceae	<i>Alyogyne hakeifolia</i>			X
	<i>Seringia velutina</i>		X	
Myrtaceae	<i>Calothamnus gilesii</i>		X	
	<i>Eucalyptus loxophleba</i>	X		
	<i>Melaleuca adnata</i>	X		
	<i>Melaleuca adnata</i>	X		
	<i>Thryptomene</i> sp.		X	
	<i>Beaufortia</i> sp.		X	
Poaceae	<i>Aristida contorta</i>		X	
	<i>Austrostipa elegantissima</i>	X		
	<i>Avena barbata</i>	X	X	
	<i>Pentameris airoides</i>	X		
	<i>Poaceae</i> sp.	X	X	
Polygalaceae	<i>Comesperma integerrimum</i>	X		
Proteaceae	<i>Grevillea obliquistigma</i>	X		
	<i>Hakea recurva</i>			X
Scrophulariaceae	<i>Eremophila glabra</i>	X		
Solanaceae	<i>Solanum lasiophyllum</i>	X	X	

Appendix B Site data

Site: NK01 (Releve)

Date	17/12/2024	Botanist	CK
Waypoint	NK01	Landform	Hill
NW Corner Latitude	-28.9136	Slope and Aspect	Gentle, East
NW Corner Longitude	115.8352	Soil type	Sandy clay
Rock cover (%)	<10	Soil colour	Dark brown, orange
Rock type	Laterite	Fire history	>10 years
Vegetation condition	Poor (northern and Eremeian only), Good	Disturbance	Weeds
Vegetation description	<i>Eucalyptus loxophleba</i> low woodland over <i>Acacia acuminata</i> and <i>Grevillea obliquistigma</i> mid sparse shrubland over <i>Avena barbata</i> low tussock grassland		

Photo



Species	Stratum	Cover
<i>Ptilotus polystachyus</i>	Herb	<1
<i>Waitzia acuminata</i>	Herb	1-5
<i>Enchylaena tomentosa</i>	Shrub <1m	<1
<i>Acacia acuminata</i>	Shrub 1-2m	1-5
<i>Acacia andrewsii</i>	Shrub <1m	1-5
<i>Eucalyptus loxophleba</i>	Tree <10m	10-25
<i>Austrostipa elegantissima</i>	Grass	<1
<i>Avena barbata</i>	Grass	25-50
<i>Pentameris airoides</i>	Grass	<1
<i>Poaceae</i> sp.	Grass	<1
<i>Comesperma integerrimum</i>	Vine	<1
<i>Grevillea obliquistigma</i>	Shrub 1-2m	1-5

Site: NK02 (Releve)

Date	17/12/2024	Botanist	CK
Waypoint	NK02	Landform	Hill
NW Corner Latitude	-28.9135	Slope and Aspect	Gentle, East
NW Corner Longitude	115.8303	Soil type	Sandy clay
Rock cover (%)	NA	Soil colour	Dark brown, orange
Rock type	NA	Fire history	>10 years
Vegetation condition	Poor (northern and Eremaean only)	Disturbance	Weeds, roadside
Vegetation description	<i>Eucalyptus loxophleba</i> low woodland over <i>Melaleuca adnata</i> tall open shrubland over <i>Avena barbata</i> low tussock grassland		

Photo



Species	Stratum	Cover
<i>Acacia acuminata</i>	Shrub 1-2m	<1
<i>Acacia andrewsii</i>	Shrub <1m	1-5
<i>Allocasuarina campestris</i>	Shrub 1-2m	<1
<i>Austrostipa elegantissima</i>	Grass	<1
<i>Avena barbata</i>	Grass	25-50
<i>Comesperma integerrimum</i>	Vine	<1
<i>Enchylaena tomentosa</i>	Shrub <1m	<1
<i>Eucalyptus loxophleba</i>	Tree <10m	10-25
<i>Melaleuca adnata</i>	Shrub >2m	1-5
<i>Melaleuca adnata</i>	Shrub <1m	<1
<i>Poaceae</i> sp.	Grass	<1
<i>Ptilotus polystachyus</i>	Herb	<1
<i>Rhagodia drummondii</i>	Shrub <1m	<1
<i>Solanum lasiophyllum</i>	Shrub <1m	<1
<i>Waitzia acuminata</i>	Herb	1-5

Site: NK03 (Releve)

Date	17/12/2024	Botanist	CK
Waypoint	NK03	Landform	Plain
NW Corner Latitude	-28.9131	Slope and Aspect	Gentle, West
NW Corner Longitude	115.8099	Soil type	Sandy clay
Rock cover (%)	NA	Soil colour	Dark brown, orange
Rock type	NA	Fire history	>10 years
Vegetation condition	Degraded	Disturbance	Weeds
Vegetation description	<i>Eucalyptus loxophleba</i> low open woodland over <i>Melaleuca adnata</i> tall sparse shrubland over <i>Avena barbata</i> and <i>Austrostipa elegantissima</i> open tussock grassland		

Photo



Species	Stratum	Cover
<i>Acacia andrewsii</i>	Shrub <1m	<1
<i>Atriplex vesicaria</i>	Shrub <1m	1-5
<i>Austrostipa elegantissima</i>	Grass	5-10
<i>Avena barbata</i>	Grass	10-25
<i>Enchylaena tomentosa</i>	Shrub <1m	<1
<i>Eremophila glabra</i>	Shrub 1-2m	1-5
<i>Eucalyptus loxophleba</i>	Tree <10m	5-10
<i>Melaleuca adnata</i>	Shrub >2m	1-5
<i>Poaceae</i> sp.	Grass	<1
<i>Ptilotus polystachyus</i>	Herb	<1
<i>Rhagodia drummondii</i>	Shrub <1m	<1
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	Shrub <1m	<1

Site: NK04 (Releve)

Date	17/12/2024	Botanist	CK
Waypoint	NK04	Landform	Plain
NW Corner Latitude	-28.9135	Slope and Aspect	Gentle, West
NW Corner Longitude	115.8161	Soil type	Sandy clay
Rock cover (%)	<10	Soil colour	Dark brown, orange
Rock type	Granite	Fire history	>10 years
Vegetation condition	Good	Disturbance	Weeds
Vegetation description	<i>Calothamnus gilesii</i> tall sparse shrubland over <i>Allocasuarina campestris</i> , <i>Acacia acuminata</i> , and <i>Beaufortia</i> sp. mid sparse shrubland over <i>Waitzia acuminata</i> low sparse forbland		

Photo



Species	Stratum	Cover
<i>Acacia acuminata</i>	Shrub 1-2m	1-5
<i>Allocasuarina campestris</i>	Shrub 1-2m	1-5
<i>Aristida contorta</i>	Grass	<1
<i>Avena barbata</i>	Grass	<1
<i>Beaufortia</i> sp.	Shrub 1-2m	1-5
<i>Calothamnus gilesii</i>	Shrub >2m	5-10
<i>Cassytha pomiformis</i>	Vine	<1
<i>Glischrocaryon flavescens</i>	Shrub <1m	<1
<i>Poaceae</i> sp.	Grass	<1
<i>Seringia velutina</i>	Shrub <1m	<1
<i>Solanum lasiophyllum</i>	Shrub <1m	<1
<i>Thryptomene</i> sp.	Shrub 1-2m	<1
<i>Waitzia acuminata</i>	Herb	1-5