

Snapshot Bushland Survey

Morillo Farm & Tootanellup Area

Remnant Vegetation Eco-restoration conservation and planning

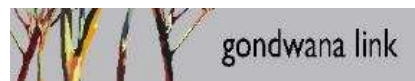


October 2020

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<http://www.gondwanalink.org/>

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Aerial View of with Boggy Lake with parts of Morillo and Lo 2249 also visible. Drone Photography By Joe Pearce.

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1. INTRODUCTION

A snapshot survey of remnant vegetation sites in the Tootanellup area was undertaken on 22nd September 2020 to identify, prioritise future eco-restoration works and recommended management actions to be conducted on the property as part of Green Skills and Gondwana Link Program:

<https://greenskills.org.au/> and <http://www.gondwanalink.org/>

The area of property surveyed is located in the Shire of Plantagenet in WA's Great Southern region

The area of property surveyed is located in the Shire of Plantagenet in WA's Great Southern Region. The properties included in the survey area are comprised of several separate land titles including:

158 Caldwell Road, Perillup WA (Lot 2068 on Deposited plan 206247, 418.6448 hectares) Morillo Farm

Lot 2249 on Deposited plan 166959, Rocky Gully Road (49.4551 hectares) - Green Skills Inc;

Lot 2067 on Deposited plan 206247 (482.4207 hectares), Lot 2216 on Deposited plan 166394 (418.8926 hectares) and

Lot 4 on Deposited plan 049066 (333.965 hectares)

The survey area is bounded by Frankland Heritage Trail to the north, McKeaig Road to the east, Rocky Gully Road to the south, and Quindabellup Road to the west. Tootanellup Nature Reserve is a 970-hectare area of remnant vegetation that lies to the southwest of the survey area and another large reserve is located to the northeast of the survey area. The study area for this report lies in the Kent River catchment area.

Besides these reserves, the land surrounding the property is predominantly farmland and variable sized areas of remnant vegetation, wetlands and waterways. The survey area for this report lies between approximately 225 and 250 metres above sea level in the Kent River catchment area.

The area has predominantly been cleared for agricultural activities and a large amount of the remaining remnant vegetation, wetlands and waterways are not protected from grazing and other agricultural impacts. This report includes some recommendations for areas to be retained and fenced to exclude stock for conservation purposes.

In 2002, it was estimated that 47.8% (231,912 hectares) pre-European vegetation remained in the Shire of Plantagenet (Shepherd et al., 2002) and the condition of much of this remaining vegetation is not known or formally protected in reserves from the impacts of agricultural activities, including stock grazing pressure.

The property is within the Jarrah Forest Interim Biogeographic Regionalisation for Australia (IBRA) region and Southern Jarrah IBRA sub-region (Atlas of Living Australia, 2020).

Two main vegetation complexes are defined by Havel & Mattiske (1998, updated 2016) within the survey area:

1. Camballup (Vegetation complex 54) – Darling Plateau – Depressions and swamps on uplands: Mosaic of woodland of *Eucalyptus marginata* subsp. *marginata*-*Corymbia calophylla* on slopes, and woodland of *Eucalyptus occidentalis*-*Melaleuca cuticularis*-*Melaleuca raphiophylla*, low woodland of *Melaleuca preissiana*-*Banksia littoralis* and tall shrublands of *Melaleuca viminea* on broad depressions in humid to semiarid zones.
2. Mallawillup (Vegetation complex 189) – Darling Plateau – Uplands: Open forest of *Eucalyptus marginata* subsp. *marginata*-*Corymbia calophylla*-*Banksia grandis* on undulating low rises in subhumid and semiarid zones.

2. SURVEY TEAM

- Basil Schur – Green Skills Inc. Project Manager
- Melissa Howe (BSc Environmental Management) – Ecologist, contracted by Green Skills Inc.
- Andrew Dickinson – Bird survey consultant, contracted by Green Skills Inc.
- Angela Dickinson – volunteer
- David Taylor – Landholder

3. SURVEY METHODS

A snapshot vegetation survey was undertaken in the Tootanellup area by the Survey team assessing a range of core attributes for numerous remnant vegetation sites and wetlands. A variety of remnant vegetation sites were surveyed on the property, of which the majority were surveyed. A total of 5 projects have been proposed for conservation fencing works for a minimum of 83.4 hectares of remnant vegetation with a total perimeter of 8.654 km (see Maps). Proposed fencing is recommended to be constructed to fence off wetlands and existing remnant vegetation.

Core attributes selected and assessed included vegetation type, vegetation condition, size and perimeter of the remnant vegetation, presence of Threatened, Specially Protected and/or Priority flora and fauna species (if known), presence of wetlands or waterways, connectivity to other vegetation and observed or potential disturbances and threats. In addition to this, a bird survey was undertaken by Andrew Dickinson at each site assessed and included in Appendices 1 & 2.

It is noted that some wetlands and remnant vegetation sites were connected to other areas of remnant vegetation on the property and across adjacent properties. The sites containing remnant vegetation were assessed for their vegetation condition. The vegetation condition assessment was adapted from the Keighery Condition Scale (Keighery, 1994) based on a rating of 1 (*Very degraded*) to 5 (*Excellent*) (see Appendix 3: *Vegetation Condition Scale*).

Vegetation types were assigned based on Beard vegetation associations (Beard et al, 2013).

Subsequently, a priority rating was assigned to each site ranging from *High* to *Low* for future eco-restoration works and management actions based on a subjective review of each site's overall core attributes.

Management recommendations and reasons for priority ratings were attributed to each site (see 5: *Summary of Survey results and Management recommendations*).

Each remnant vegetation site and lake on the property was mapped (see Map 1) and photos were taken for each site assessed and included in Section 5: *Summary of Survey results and Management recommendations*.

Data collected was recorded on vegetation survey sheets developed by Green Skills and consultants for this assessment (see Appendix 4: *Vegetation Snapshot Survey - 2020 Site Data Form*)

Bushland Fencing Site Plans were prepared in draft form for feedback first.

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4. MAPS

MAP 1: PROPERTIES SURVEYED IN THE TOOTANELLUP AREA



MAP 2: PRIORITY FENCING PROJECTS ON TOOTANELLUP PROPERTIES SURVEYED



MAP 3: TOOTANELLUP AREA – FENCING PROJECT 1



MAP 4: TOOTANELLUP AREA – FENCING PROJECT 2



MAP 5: TOOTANELLUP AREA – FENCING PROJECT 3



MAP 6: TOOTANELLUP AREA – FENCING PROJECT 4



MAP 7: TOOTANELLUP AREA – FENCING PROJECT 5



5. SUMMARY OF RESULTS & MANAGEMENT RECOMMENDATIONS

SITE H17 & H16 – LOT 2216			
Date: Tuesday 22 nd Sept 2020		Recorder/s: Melissa Howe, Basil Schur, Andrew & Angela Dickinson	
Photo numbers	H17: 9174-9179 H16: 9180-9182	Connectivity to other bushland (Y/N)	Y – Randell Road Reserve

Remnant Vegetation	Y	Cross box	Coordinates	E
Restoration/Revegetation			Zone: 50	N

Site Vegetation							
Cross box	Woodland	Shrubland	Mallee heath	Forest	Open	Mid dense	Closed
Upper				X	X		
Mid							
Lower							
Ground				X	X		

Land Formation Cross box	Level	X	Gentle	X	Moderate	
	Steep		Very steep		Precipitous	
Wetlands/creek present (describe)	N					

Disturbance/Threats Y/N	Animal paths	Y	Stock grazing	Y	Flooding	N
	Erosion	N	Recent fire (<2 yrs)	N	Weeds	Y understorey
	Salinity	N	Dieback disease	N		
Other notes	Before the bush cleared, there was an Aboriginal burial site – near leaning red gum (marri) (Source: Gwen Preston Previous owner's dad told her that). Sites previously logged for sleepers					

FLORA - DOMINANT SPECIES
<i>Eucalyptus marginata</i> (Jarrah), <i>Corymbia calophylla</i> (Marri), no understorey
FAUNA SPECIES
Regent parrots, Black cockatoos – Forest Red-tailed Black-cockatoos resident

SITE NO.	AREA (hectares)/ PERIMETER (metres)	VEGETATION TYPE	VEGETATION CONDITION 1-VERY DEGRADED TO 5-EXCELLENT	PRIORITY FOR MANAGEMENT LOW, MEDIUM, HIGH, VERY HIGH
H17 H16	H17: 1 ha/463 m H16: 3.2 ha/744 m	Jarrah-Marri open forest	2 - Degraded	Low

PHOTOS & DESCRIPTOR



Site H17: Survey team with land manager Davis Taylor assessing remnant jarrah-marri forest. Image 9176.



Site H17: 1-hectare unfenced jarrah-marri open forest in degraded condition. Image 9177.



Site H17: Survey team being told about potential Aboriginal grave site located near a leaning marri tree.



Site H16: 3.2-hectare unfenced jarrah-marri open forest in degraded condition. Image 9180.

MANAGEMENT RECOMMENDATIONS AND/OR REASON FOR PRIORITY
<p>Unfenced – stock grazing</p> <p>Low priority for fencing due to small size and degraded condition</p> <p>Potentially an important Aboriginal cultural heritage site where an Aboriginal person may have been buried</p>

SITE H14 – LOT 2216			
Date: Tuesday 22 nd Sept 2020		Recorder/s: Melissa Howe, Basil Schur, Andrew & Angela Dickinson	
Photo numbers	9183-9189	Connectivity to other bushland (Y/N)	Y

Remnant Vegetation	Y	Cross box	Coordinates	E
Restoration/Revegetation			Zone: 50	N

Site Vegetation							
Cross box	Woodland	Shrubland	Mallee heath	Forest	Open	Mid dense	Closed
Upper				X	X		
Mid							
Lower				X	X		
Ground							

Land Formation Cross box	Level		Gentle	X	Moderate	
	Steep		Very steep		Precipitous	
Wetlands/creek present (describe)	N					

Disturbance/Threats Y/N	Animal paths	Y	Stock grazing	Y	Flooding	N
	Erosion	N	Recent fire (<2 yrs)	N	Weeds	Edge & interspersed
	Salinity	N	Dieback disease	N		
Other notes						

FLORA - DOMINANT SPECIES
<i>Eucalyptus marginata</i> (Jarrah), <i>Corymbia calophylla</i> (Marri), <i>Hakea lissocarpha</i> (Honey Bush), <i>Banksia lindleyana</i> (thick prickly), <i>Boronia species</i> (?Aniseed Boronia), <i>Acacia pulchella</i> , <i>Hypocalymma species</i> , * <i>Acacia longifolia</i> (Sydney Golden Wattle) removed

FAUNA SPECIES

SITE NO.	AREA (hectares)/ PERIMETER (metres)	VEGETATION TYPE	VEGETATION CONDITION 1-VERY DEGRADED TO 5-EXCELLENT	PRIORITY FOR MANAGEMENT LOW, MEDIUM, HIGH, VERY HIGH
H14	3.9 ha/1116 m	Jarrah-Marri open forest	3	Medium

PHOTOS & DESCRIPTOR



Site H14: 3.9-hectare unfenced jarrah-marri open forest in good condition. Image 9183.



Site H14: Unfenced jarrah-marri open forest in good condition adjacent to Randell Road Reserve and private property (Site H8) remnant vegetation. Image 9185.



Site H14: Good condition remnant vegetation occasionally used for stock shelter. Image 9186.



Site H14: *Banksia dallaneyii* Couch Honeypot) and *Xanthorrhoea* species. Image 9188.

MANAGEMENT RECOMMENDATIONS AND/OR REASON FOR PRIORITY

Not fenced – used for stock shelter sometimes

Medium priority for fencing due to good condition, size, and connectivity to remnant vegetation adjacent Randell Road Reserve (east) and private property to the north (Site H8 – 23.8 hectares & 2218 m perimeter).

Unpalatable shrub species remaining such as some *Hakea* and *Banksia* species.

SITE H8, H7, H6, H1, H2, H3, H4 – LOT 2216			
Date: Tuesday 22 nd Sept 2020		Recorder/s: Melissa Howe, Basil Schur, Andrew & Angela Dickinson	
Photo numbers	9190-9205	Connectivity to other bushland (Y/N)	Y

Remnant Vegetation	Y	Cross box	Coordinates	E
Restoration/Revegetation			Zone: 50	N

Site Vegetation							
Cross box	Woodland	Shrubland	Mallee heath	Forest	Open	Mid dense	Closed
Upper	X Mel			X	X	X	
Mid	X Mel			X	X	X	
Lower	X Mel			X	X	X	
Ground				X	X		

Land Formation	Level	X	Gentle		Moderate	
Cross box	Steep		Very steep		Precipitous	
Wetlands/creek present (describe)	Y Melaleuca woodland					

Disturbance/Threats Y/N	Animal paths	Y	Stock grazing	Y sometimes	Flooding	Poss (wetland)
	Erosion	Y/?	Recent fire (<2 yrs)	N	Weeds	Y edge
	Salinity	N	Dieback disease			
Other notes						

FLORA - DOMINANT SPECIES
<i>Eucalyptus decipiens</i> (Moit), <i>Xanthorrhoea preissii</i> (Balga), diverse understorey species such as: <i>Sowerbaea laxiflora</i> (Purple tassels), <i>Calothamnus species</i> (One-sided Bottlebrush), <i>Banksia species</i> (fine), <i>Hypocalymma species</i> , <i>Hakea undulata</i> (Wavy-leaved Hakea), paper daisies, <i>Eucalyptus wandoo</i> (Wandoo), <i>Melaleuca cuticularis</i> (Saltwater Paperbark), <i>Caladenia ?christinae/longicauda</i> (Potential DRF to be confirmed)

FAUNA SPECIES
Brush-tailed Wallabies seen on the property.

SITE NO.	AREA (hectares)/ PERIMETER (metres)	VEGETATION TYPE	VEGETATION CONDITION 1-VERY DEGRADED TO 5-EXCELLENT	PRIORITY FOR MANAGEMENT LOW, MEDIUM, HIGH, VERY HIGH
H8, H7, H6, H1, H2, H3, H4	H8: 23.8 ha/2218 m H7: 21.1 ha/3459 m H6: 46.3 ha/5966 m H1: 0.6 ha/310 m H2: 7.9 ha/1348 m H3: 0.7 ha/430 m H4: 7.8 ha/1462 m	Melaleuca wetland Wandoo woodland <i>Eucalyptus decipiens</i> (Moit) open forest	3/4	High

PHOTOS & DESCRIPTOR



Site H8 & H7: Earthworks undertaken to try and retain water on-site in Melaleuca wetland.



Site H8: *Eucalyptus decipiens* (Moit) with good to very good condition understorey.



Site H7: 21.1-hectare remnant vegetation including Melaleuca wetland. Image 9196.



Site H7: Melaleuca wetland partially previously cleared and naturally regenerating. Image 9197.



Site H7: Melaleuca wetland partially previously cleared and naturally regenerating. Image 9199.



Potential threatened flora species, *Caladenia ?christineae* (Spider orchid). Listed as Endangered (WA legislation) and Vulnerable (Federal EPBC Act). Identification to be confirmed. Image 9200.



Mature *Eucalyptus wandoo* (Wandoo). Image 9202.



Melaleuca wetland with native sedges. Image 9204.



Significant change in vegetation cover in Melaleuca wetland. Image 9205.

MANAGEMENT RECOMMENDATIONS AND/OR REASON FOR PRIORITY

Unfenced - High priority to fence wetland area to exclude stock
 Good to very good condition remnant vegetation of considerable size and species diversity.
 Potential occurrence of threatened species (Declared Rare Flora) namely *Caladenia ?christineae* (Christine's Spider orchid). Listed as Endangered (WA legislation) and Vulnerable (Federal EPBC Act). Identification to be confirmed.

SITE H5 – LOT 2216			
Date: Tuesday 22 nd Sept 2020		Recorder/s: Melissa Howe, Basil Schur, Andrew & Angela Dickinson	
Photo numbers	9206-9211	Connectivity to other bushland (Y/N)	Y – other remnant vegetation

Remnant Vegetation	Y	Cross box	Coordinates	E
Restoration/Revegetation			Zone: 50	N

Site Vegetation							
Cross box	Woodland	Shrubland	Mallee heath	Forest	Open	Mid dense	Closed
Upper				X	X		
Mid				X	X		
Lower				X	X		
Ground				X	X		

Land Formation Cross box	Level	X	Gentle		Moderate	
	Steep		Very steep		Precipitous	
Wetlands/creek present (describe)	N					

Disturbance/Threats Y/N	Animal paths	Y	Stock grazing	Y poss	Flooding	N
	Erosion	N	Recent fire (<2 yrs)	6 years ago	Weeds	Edge
	Salinity	N	Dieback disease	? dead balga		
Other notes	Not logged as intensively as other areas on the property, cool winter burns applied approximately 6 years ago 3 to 4 acres.					

FLORA - DOMINANT SPECIES
<i>Eucalyptus marginata</i> (Jarrah), <i>Corymbia calophylla</i> (Marri), <i>Xanthorrhoea preissii</i> (Balga), <i>Macrozamia riedlei</i> (Zamia Palm)

FAUNA SPECIES

SITE NO.	AREA (hectares)/ PERIMETER (metres)	VEGETATION TYPE	VEGETATION CONDITION 1-VERY DEGRADED TO 5-EXCELLENT	PRIORITY FOR MANAGEMENT LOW, MEDIUM, HIGH, VERY HIGH
H5	110.1 ha/4988 m	Jarrah-Marri open forest	3/4 – Good to Very good	Medium

PHOTOS & DESCRIPTOR



H5: Unfenced 110.1-hectare remnant Jarrah-Marri open forest in very good condition. Image 9207.



H5: Fencing of this large remnant Jarrah-Marri vegetation is considered a high priority. Image 9211.

MANAGEMENT RECOMMENDATIONS AND/OR REASON FOR PRIORITY
<p>Unfenced – high priority for fencing to exclude stock.</p> <p>Large size Jarrah-Marri open forest remnant vegetation in good to very good condition with intact understorey.</p> <p>Good plant recruitment of native flora species.</p> <p>Previously logged, potentially for sleepers, but not as intensively as other remnant vegetation on the property.</p>

SITE H9 – LOT 2216			
Date: Tuesday 22 nd Sept 2020		Recorder/s: Melissa Howe, Basil Schur, Andrew & Angela Dickinson	
Photo numbers	9213-9215	Connectivity to other bushland (Y/N)	Y

Remnant Vegetation	Y	Cross box	Coordinates	E
Restoration/Revegetation			Zone: 50	N

Site Vegetation							
Cross box	Woodland	Shrubland	Mallee heath	Forest	Open	Mid dense	Closed
Upper				X	X		
Mid				X	X		
Lower				X	X		
Ground				X	X		

Land Formation Cross box	Level		Gentle	X	Moderate	
	Steep		Very steep		Precipitous	
Wetlands/creek present (describe)		Ephemeral creek				

Disturbance/Threats Y/N	Animal paths	Y	Stock grazing	Y	Flooding	poss
	Erosion	N	Recent fire (<2 yrs)	7 years ago	Weeds	Edge, interspersed
	Salinity	N	Dieback disease			
Other notes						

FLORA - DOMINANT SPECIES
<i>Eucalyptus marginata</i> (Jarrah), <i>Corymbia calophylla</i> (Marri), <i>Bossiaea linophylla</i> , <i>Hakea lissocarpha</i> (Honey Bush), new <i>Eucalyptus</i> species plant recruitment.

FAUNA SPECIES

SITE NO.	AREA (hectares)/ PERIMETER (metres)	VEGETATION TYPE	VEGETATION CONDITION 1-VERY DEGRADED TO 5-EXCELLENT	PRIORITY FOR MANAGEMENT LOW, MEDIUM, HIGH, VERY HIGH
H9	H9: 2.8 ha/1255 m	Jarrah-Marri open forest	3 - Good	Medium

PHOTOS & DESCRIPTOR



Site H9: 2.8-hectare Jarrah-Marri open forest in good condition with some native understorey species remaining. Image 9213.



Site H9: Good connectivity to other remnant vegetation. Recommended as a medium priority for fencing to exclude stock. Image 9214.

MANAGEMENT RECOMMENDATIONS AND/OR REASON FOR PRIORITY

Partially fenced but stock allowed in – Medium priority for fencing to exclude stock.
 Good plant recruitment of *Eucalyptus species*.
 This Jarrah-Marri remnant vegetation has good connectivity to other remnant vegetation.

SITE H10, H11, H12, H13 & H15 – LOT 2216			
Date: Tuesday 22 nd Sept 2020		Recorder/s: Melissa Howe, Basil Schur, Andrew & Angela Dickinson	
Photo numbers	H10 & H12: 9216-9219 H13: ? H15: 9220-9221	Connectivity to other bushland (Y/N)	Y – Site H9

Remnant Vegetation	Y	Cross box	Coordinates	E
Restoration/Revegetation			Zone: 50	N

Site Vegetation							
Cross box	Woodland	Shrubland	Mallee heath	Forest	Open	Mid dense	Closed
Upper	X wandoo						
Mid	X						
Lower							
Ground	X weeds						

Land Formation	Level		Gentle	X	Moderate	
Cross box	Steep		Very steep		Precipitous	
Wetlands/creek present (describe)	Y – creek					

Disturbance/Threats Y/N	Animal paths	Y	Stock grazing	Y	Flooding	poss
	Erosion	poss	Recent fire (<2 yrs)		Weeds	Y understorey
	Salinity	N	Dieback disease	N		
Other notes						

FLORA - DOMINANT SPECIES
<i>Eucalyptus rudis</i> (Flooded gum); <i>Eucalyptus decipiens</i> (Moit); <i>Eucalyptus wandoo</i> (Wandoo); <i>Hakea lissocarpha</i> (Honey Bush)

FAUNA SPECIES

SITE NO.	AREA (hectares)/ PERIMETER (metres)	VEGETATION TYPE	VEGETATION CONDITION 1-VERY DEGRADED TO 5-EXCELLENT	PRIORITY FOR MANAGEMENT LOW, MEDIUM, HIGH, VERY HIGH
H10, H11, H12, H13, H15	H10: 6.6 ha/1534 m H11: 2.4 ha/808 m H12: 0.4 ha/322 m H13: 0.3 ha/203 m H15: 0.3 ha/230 m	Wandoo woodland	H10: 2.5 – Degraded to Good Others: 2 - Degraded	H10 – Medium Other sites – Low

PHOTOS & DESCRIPTOR



Site H10: Partially fenced 6.6-hectare of Wandoo woodland in degrade to good condition due to stock grazing. Image 9216.



Site H10: Angela Dickinson near impressive mature *Eucalyptus wandoo* (Wandoo). Image 9218.



Site H10: Melissa Howe assessing the site. Image 9219.



Site H15: 0.3-hectares Jarrah-Marri-Wandoo vegetation a low priority to fence due to small size, degraded condition and isolation from other remnant vegetation. Image 9220.



Site H15: Unfenced, degraded condition Jarrah-Marri-Wandoo remnant vegetation. Image 9221.

MANAGEMENT RECOMMENDATIONS AND/OR REASON FOR PRIORITY

H10: 6.6-hectare unfenced Wandoo woodland remnant vegetation – Medium priority for fencing to exclude stock due to size, degraded to good condition and good connectivity with adjacent remnant vegetation. Mainly unpalatable understorey species remaining such as *Hakea lissocarpa* (Honey Bush) (prickly).

H11, H12, H13, H15: Unfenced Jarrah-Marri-Wandoo woodland remnant vegetation low priority for fencing due to small size, degraded condition and isolation from other remnant vegetation.

The mature trees & fallen logs in these sites are still providing important habitat for nesting, including tree hollows.

SITE J7, J6, J4, J3, J8, J2 – LOT 4			
Date: Tuesday 22 nd Sept 2020		Recorder/s: Melissa Howe, Basil Schur, Andrew & Angela Dickinson	
Photo numbers	J7 - 9222-9225 J6 - 9226-9228 (cattle in it) Neighbouring bushland (south) - ?9229, 9245-9247 J4 – 9241-2 J3 – 9243-9244 J8 – no photos J2 – 9248-9250	Connectivity to other bushland (Y/N)	N

Remnant Vegetation	Y	Cross box	Coordinates	E
Restoration/Revegetation			Zone: 50	N

Site Vegetation							
Cross box	Woodland	Shrubland	Mallee heath	Forest	Open	Mid dense	Closed
Upper				X	X		
Mid				X	X		
Lower							
Ground				X weeds			

Land Formation Cross box	Level	X	Gentle	X	Moderate	
	Steep		Very steep		Precipitous	
Wetlands/creek present (describe)	N					

Disturbance/Threats Y/N	Animal paths	Y	Stock grazing	Y sheep & cattle	Flooding	N
	Erosion	N	Recent fire (<2 yrs)	N	Weeds	Y
	Salinity	N	Dieback disease	N		
Other notes						

FLORA - DOMINANT SPECIES
<i>Eucalyptus marginata</i> (Jarrah), <i>Corymbia calophylla</i> (Marri)
FAUNA SPECIES

SITE NO.	AREA (hectares)/ PERIMETER (metres)	VEGETATION TYPE	VEGETATION CONDITION 1-VERY DEGRADED TO 5-EXCELLENT	PRIORITY FOR MANAGEMENT LOW, MEDIUM, HIGH, VERY HIGH
J7, J6, J4, J3, J8, J2	J7: 9.4 ha/1631 m J6: 1.5 ha/558 m J4: 2.5 ha/986 m J3: 10.3 ha/1466 m J8: 2.9 ha/773 m	Jarrah-Marri-open forest with Banksia-Tea tree understorey Creekline	2 - Degraded	Larger remnants - Medium priority Smaller remnants - Lower priority

PHOTOS & DESCRIPTOR



Site J7: 9.4-hectare mature Jarrah-Marri forest in degraded condition. Image 9223.



Site J7: Survey team with land manager assessing Jarrah-Marri remnant vegetation. Image 9224.



Site J6: Cattle grazing in 1.5-hectare, isolated unfenced Jarrah-Marri remnant vegetation. Image 9227.



Site J6: Unfenced 1.5-hectare remnant Jarrah-Marri vegetation in degraded condition. Image 9228.



Neighbouring property to the south. Image 9229.



Site J4: 2.5-hectare Jarrah-Marri open forest in degraded condition. Image 9241.



Site J4: 2.5-hectare unfenced Jarrah-Marri open forest in degraded condition. Image 9242.



Site J3: 10.3-hectare unfenced Jarrah-Marri open forest in degraded condition. Image 9243.



Site J3: 10.3-hectare unfenced Jarrah-Marri open forest in degraded condition. Image 9244.



Clearing on neighbouring property for blue gum plantation (southern boundary of Morilla). Image 9245.



Site J2: 3.5-hectare unfenced Jarrah-Marri open forest in degraded condition. Image 9250.



Site J2: 3.5-hectare unfenced Jarrah-Marri open forest in degraded condition. Image 9248.

MANAGEMENT RECOMMENDATIONS AND/OR REASON FOR PRIORITY

Site J7 - Rocky, lots of fallen timber, particularly on edges (pushed over or fallen?)

Site J6 – unfenced small, isolated remnant with cattle grazing (current), no evidence of past fire.

The old growth trees & fallen logs in these sites are still providing important habitat for nesting, including tree hollows and hollow logs.

Neighbouring bushland (southern boundary of Morilla)

SITE J5 & J4 – LOT 4			
Date: Tuesday 22 nd Sept 2020		Recorder/s: Melissa Howe, Basil Schur, Andrew & Angela Dickinson	
Photo numbers	9231-9240	Connectivity to other bushland (Y/N)	Y – neighbours

Remnant Vegetation	Y	Cross box	Coordinates	E
Restoration/Revegetation			Zone: 50	N

Site Vegetation							
Cross box	Woodland	Shrubland	Mallee heath	Forest	Open	Mid dense	Closed
Upper				X	X		
Mid				X	X		
Lower							
Ground				X	X		

Land Formation	Level	X	Gentle	X	Moderate	
Cross box	Steep		Very steep		Precipitous	
Wetlands/creek present (describe)	Y – creekline					

Disturbance/Threats Y/N	Animal paths	Y	Stock grazing	Y	Flooding	poss
	Erosion	poss	Recent fire (<2 yrs)	N	Weeds	Y
	Salinity	Y	Dieback disease	?		
Other notes	<i>Banksia littoralis</i> struggling, beware the ants!					

FLORA - DOMINANT SPECIES
<i>Eucalyptus marginata</i> (Jarrah), <i>Corymbia calophylla</i> (Marri), <i>Taxandria parviceps</i> (Fine Tea tree), <i>Banksia grandis</i> (Bull Banksia) very gnarly, <i>Banksia littoralis</i> (Swamp Banksia) in poor condition

FAUNA SPECIES
Forest Red-tailed Black-cockatoo (small group of about 5)

SITE NO.	AREA (hectares)/ PERIMETER (metres)	VEGETATION TYPE	VEGETATION CONDITION 1-VERY DEGRADED TO 5-EXCELLENT	PRIORITY FOR MANAGEMENT LOW, MEDIUM, HIGH, VERY HIGH
J5 & J4	J5: 18.4 ha/3356 m J4: 2.5 ha/986 m	Jarrah-Marri open forest with Banksia & Taxandria understorey	2 - Degraded	High

PHOTOS & DESCRIPTOR



Site J5: 18.4-hectare remnant Jarrah-Marri vegetation in degraded condition. Image 9231.



Site J5: Degraded condition Jarrah-Marri-Banksia remnant vegetation on creekline. Image 9232.



Site J5: Melissa Howe taking a photo of *Anigozanthos manglesii* (Mangles Kangaroo Paw) shortly before getting completely covered in ants!



Site J5: Jarrah-Marri open forest with understorey of *Banksia grandis* (Bull Banksia), *Banksia littoralis* (Swamp Banksia) and *Taxandria parviceps* (Fine Tea tree).

MANAGEMENT RECOMMENDATIONS AND/OR REASON FOR PRIORITY

Site J4 & J5 - Project 5 – 3255 m fencing

Fencing to exclude stock is recommended as a high priority due to remnant vegetation size, species composition, creekline present and good connectivity to a large area of remnant vegetation to the south. Degraded condition, no noticeable plant recruitment besides *Taxandria parviceps* (Fine Tea tree) regrowing from lignotubers which indicates understorey was previously cleared.

SITE J1 – LOT 4			
Date: Tuesday 22 nd Sept 2020		Recorder/s: Melissa Howe, Basil Schur, Andrew & Angela Dickinson	
Photo numbers	J1 - 9252-9255 Reserve – 9256-9259; 9263 9260-9262	Connectivity to other bushland (Y/N)	Y – adjacent

Remnant Vegetation	Y	Cross box	Coordinates	E
Restoration/Revegetation			Zone: 50	N

Site Vegetation							
Cross box	Woodland	Shrubland	Mallee heath	Forest	Open	Mid dense	Closed
Upper	XA Yate			XB	XA & XB		
Mid	XA			XB	XA & XB		
Lower							
Ground	XA			XB	XB		

Land Formation	Level		Gentle		Moderate	
Cross box	Steep		Very steep		Precipitous	
Wetlands/creek present (describe)	Y + dams					

Disturbance/Threats Y/N	Animal paths	Y	Stock grazing	N	Flooding	poss
	Erosion	N	Recent fire (<2 yrs)	N	Weeds	Y understorey
	Salinity	Y	Dieback disease	N		
Other notes						

FLORA - DOMINANT SPECIES
<i>Eucalyptus rudis</i> (Flooded Gum), <i>Eucalyptus occidentalis</i> (Flat-topped Yate), <i>Melaleuca preissiana</i> (Stout Paperbark), <i>Banksia littoralis</i> (Swamp Banksia)

FAUNA SPECIES

SITE NO.	AREA (hectares)/ PERIMETER (metres)	VEGETATION TYPE	VEGETATION CONDITION 1-VERY DEGRADED TO 5-EXCELLENT	PRIORITY FOR MANAGEMENT LOW, MEDIUM, HIGH, VERY HIGH
J1	28 ha/3310 m	Yate Melaleuca wetland	2/2.5 Degraded to Fair in some sections	Low (fenced)

PHOTOS & DESCRIPTOR



Site J1: 28-hectare fenced remnant vegetation and wetland area in degraded condition. Image 9252.



Site J1: 28-hectare fenced remnant vegetation and wetland area in degraded condition. Image 9253.



Site J1: Minimal understorey species growing in this Jarrah-Marri remnant vegetation. Image 9254.



Site J1: Drainage from *Morilla* into the neighbouring Tootanellup Nature Reserve. Image 9255.



Site J1: Although degraded, this site plays an important role in filtering the water run-off that drains into Tootanellup Nature Reserve. Image 9261.



Tootanellup Nature Reserve: Approximately 950-hectares of remnant vegetation adjacent to *Morilla*'s western boundary. Image 9263.



Tootanellup Nature Reserve: Andrew & Angela Dickinson record birdlife adjacent to this large remnant vegetation. Image 9256.



Tootanellup Nature Reserve: Lake adjacent to *Morilla's* western boundary. Image 9257.



Boundary fence between Tootanellup Nature Reserve and lake (south facing photo). Image 9259.



Boundary fence between Tootanellup Nature Reserve and lake. Thin strip of remnant vegetation around the lake (north facing photo). Image 9260.

MANAGEMENT RECOMMENDATIONS AND/OR REASON FOR PRIORITY

Fenced – low priority for management

Canopies of *Melaleuca preissiana* in poor condition, dead trees around adjacent lake, site drains into adjacent lake contained within Tootanellup Nature Reserve.

SITE E1 – Lot 2249			
Date: Tuesday 22 nd Sept 2020		Recorder/s: Melissa Howe, Basil Schur, Andrew & Angela Dickinson	
Photo numbers	9278	Connectivity to other bushland (Y/N)	Y

Remnant Vegetation	Y	Cross box	Coordinates	E
Restoration/Revegetation			Zone: 50	N

Site Vegetation							
Cross box	Woodland	Shrubland	Mallee heath	Forest	Open	Mid dense	Closed
Upper	X			X	X		
Mid	X			X	X		
Lower							
Ground	X			X	X		

Land Formation	Level	X	Gentle		Moderate	
Cross box	Steep		Very steep		Precipitous	
Wetlands/creek present (describe)	Y – Yate-Melaleuca wetland					

Disturbance/Threats Y/N	Animal paths	Y	Stock grazing	Y	Flooding	Poss
	Erosion	N	Recent fire (<2 yrs)	N	Weeds	Y
	Salinity	N	Dieback disease			
Other notes						

FLORA - DOMINANT SPECIES
<i>Eucalyptus occidentalis</i> (Flat-topped Yate), <i>Eucalyptus wandoo</i> (Wandoo), <i>Eucalyptus decipiens</i> (Moit), <i>Eucalyptus marginata</i> (Jarrah), <i>Corymbia calophylla</i> (Marri), <i>Eucalyptus rudis</i> (Flooded Gum), <i>Melaleuca raphiophylla</i> (Freshwater Paperbark), <i>Melaleuca cuticularis</i> (Saltwater Paperbark), <i>Melaleuca preissiana</i> (Stout Paperbark), <i>Banksia littoralis</i> (Swamp Banksia), <i>Banksia grandis</i> (Bull Banksia).

FAUNA SPECIES

SITE NO.	AREA (hectares)/ PERIMETER (metres)	VEGETATION TYPE	VEGETATION CONDITION 1-VERY DEGRADED TO 5-EXCELLENT	PRIORITY FOR MANAGEMENT LOW, MEDIUM, HIGH, VERY HIGH
E1	16.8 ha/1906 m	Jarrah-Marri open forest, Riparian Yate & Melaleuca woodland & other	3.5 – Good to Very good	High

PHOTOS & DESCRIPTOR



Site E1: 16.8-hectares of good condition remnant vegetation with several vegetation types occurring, including 6 different Eucalypt species. Image 9278.



Site E1: Survey team spot some White-tailed Black-cockatoos on Tootanellup. Baudin's or Carnaby's?!? Image 9269.



Female (left) and mature male (right) White-tailed Black-cockatoos. Image 9272.



Site E1: Survey team break for morning tea. Image 9279.



Site E1: Survey team break for morning tea. Image 9284.



Site E1: Dam. Image 9280.



Site E1: Stock currently agisted on Tootanellup property. Image 9286.



Site E1 (left) & D1 (right): Boundary between properties. Image 9288.



Site E1: Marri in the southwest suffered a great loss of condition this year, potentially due to climatic conditions from two heat waves in December 2019 and March 2020. Image 9291.



Site E1: Marri in the southwest suffered a great loss of condition this year, potentially due to climatic conditions from two heat waves in December 2019 and March 2020. Image 9292.

MANAGEMENT RECOMMENDATIONS AND/OR REASON FOR PRIORITY

Exclude stock from property – currently stocked with sheep (agistment)

SITE D1 – LOT 1152			
Date: Tuesday 22 nd Sept 2020		Recorder/s: Melissa Howe, Basil Schur, Andrew & Angela Dickinson	
Photo numbers	9279 – D1	Connectivity to other bushland (Y/N)	Y - E1 & Tootanellup Nature Reserve

Remnant Vegetation	Y	Cross box	Coordinates	E
Restoration/Revegetation			Zone: 50	N

Site Vegetation							
Cross box	Woodland	Shrubland	Mallee heath	Forest	Open	Mid dense	Closed
Upper				X	X		
Mid				X	X		
Lower				X	X		
Ground				X	X		


Land Formation Cross box	Level	X	Gentle		Moderate	
	Steep		Very steep		Precipitous	
Wetlands/creek present (describe)		Yes				

Disturbance/Threats Y/N	Animal paths	Y	Stock grazing	?	Flooding	N
	Erosion	Y	Recent fire (<2 yrs)	N	Weeds	edge
	Salinity	N	Dieback disease	N		

FLORA - DOMINANT SPECIES
<i>Eucalyptus marginata</i> (Jarrah), <i>Corymbia calophylla</i> (Marri), <i>Xanthorrhoea preissii</i> (Balga)

FAUNA SPECIES

SITE NO.	AREA (hectares)/ PERIMETER (metres)	VEGETATION TYPE	VEGETATION CONDITION 1-VERY DEGRADED TO 5-EXCELLENT	PRIORITY FOR MANAGEMENT LOW, MEDIUM, HIGH, VERY HIGH
D1	48.1 ha/3278 m	Jarrah-Marri open forest	3 - Good	Low

PHOTOS & DESCRIPTOR	
	

MANAGEMENT RECOMMENDATIONS AND/OR REASON FOR PRIORITY
No apparent stock grazing on property

SITE B7 – LOT 2068			
Date: Tuesday 22 nd Sept 2020		Recorder/s: Melissa Howe, Basil Schur, Andrew & Angela Dickinson	
Photo numbers	9296, 9299-9302	Connectivity to other bushland (Y/N)	N

Remnant Vegetation	Y	Cross box	Coordinates	E
Restoration/Revegetation			Zone: 50	N

Site Vegetation							
Cross box	Woodland	Shrubland	Mallee heath	Forest	Open	Mid dense	Closed
Upper				X	X		
Mid				X	X		
Lower							
Ground				X	X weeds		

Land Formation Cross box	Level		Gentle	X	Moderate	
	Steep		Very steep		Precipitous	
Wetlands/creek present (describe)	N					

Disturbance/Threats Y/N	Animal paths	Y	Stock grazing	Y	Flooding	N
	Erosion	N	Recent fire (<2 yrs)	N	Weeds	Y understorey
	Salinity	N	Dieback disease	?		
Other notes						

FLORA - DOMINANT SPECIES
<i>Eucalyptus marginata</i> (Jarrah), <i>Corymbia calophylla</i> (Marri), <i>Pauridia species</i> (native ground cover species – 1 plant)

FAUNA SPECIES
Forest Red-tailed Black-cockatoo

SITE NO.	AREA (hectares)/ PERIMETER (metres)	VEGETATION TYPE	VEGETATION CONDITION 1-VERY DEGRADED TO 5-EXCELLENT	PRIORITY FOR MANAGEMENT LOW, MEDIUM, HIGH, VERY HIGH
B7	4.1 ha/1123 m	Jarrah-Marri open forest	2 - Degraded	Medium

PHOTOS & DESCRIPTOR



Site B7: 4.1-hectare unfenced, degraded condition Jarrah-Marri open forest is a medium priority for fencing due to the presence of a Forest Red-tailed Black-cockatoo roost. Image 9296.



Site B7: Jarrah-Marri open forest provides important roosting site for Black-cockatoos despite having no understorey and lack of recruitment due to stock grazing pressure. Image 9299.



Site B7: Tree hollow potentially suitable for a Black-cockatoo or other hollow dependent fauna. Image 9301.



Site B7: Checking out the site condition and habitat values of Jarrah-Marri remnant vegetation. Image 9302.

MANAGEMENT RECOMMENDATIONS AND/OR REASON FOR PRIORITY
<p>Medium priority to fence to exclude stock due to its importance as a Forest Red-tailed Black-cockatoo roost and numerous tree hollows that look active.</p> <p>Site is in degraded condition and will continue to degrade if unfenced without tree replacement/recruitment</p> <p>Lots of fallen branches and trees, some with hollows.</p> <p>Forest Red-tailed Black-cockatoos were reported to be roosting at this site by the landholders.</p>

SITE B11 & B10 – LOT 2068			
Date: Tuesday 22 nd Sept 2020		Recorder/s: Melissa Howe, Basil Schur, Andrew & Angela Dickinson	
Photo numbers	B11: 9314 B10: 9315	Connectivity to other bushland (Y/N)	N

Remnant Vegetation	Y	Cross box	Coordinates	E
Restoration/Revegetation			Zone: 50	N

Site Vegetation							
Cross box	Woodland	Shrubland	Mallee heath	Forest	Open	Mid dense	Closed
Upper				X	X		
Mid				X	X		
Lower							
Ground				X weeds	X		

Land Formation Cross box	Level		Gentle	X	Moderate	
	Steep		Very steep		Precipitous	
Wetlands/creek present (describe)	N					

Disturbance/Threats Y/N	Animal paths	Y	Stock grazing	Y	Flooding	N
	Erosion	N	Recent fire (<2 yrs)	N	Weeds	Y understorey
	Salinity	N	Dieback disease	?		
Other notes						

FLORA - DOMINANT SPECIES
<i>Eucalyptus marginata</i> (Jarrah), <i>Corymbia calophylla</i> (Marri)
FAUNA SPECIES

SITE NO.	AREA (hectares)/ PERIMETER (metres)	VEGETATION TYPE	VEGETATION CONDITION 1-VERY DEGRADED TO 5-EXCELLENT	PRIORITY FOR MANAGEMENT LOW, MEDIUM, HIGH, VERY HIGH
B10 & B11	B10: 1.3 ha/434 m B11: 0.9 ha/380 m	Jarrah-Marri open forest	2 – Degraded	Low

PHOTOS & DESCRIPTOR



Site B10: 1.3-hectare unfenced degraded Jarrah-marri open forest. Image 9314.



Site B11: 0.9-hectare unfenced degraded Jarrah-marri open forest. Image 9315.

MANAGEMENT RECOMMENDATIONS AND/OR REASON FOR PRIORITY

Site B10 & B11: Low priority for fencing due to isolation, small size and degraded condition
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SITE B9 – LOT 2068 – PROJECT 3			
Date: Tuesday 22 nd Sept 2020		Recorder/s: Melissa Howe, Basil Schur, Andrew & Angela Dickinson	
Photo numbers	9316-9317, 9318	Connectivity to other bushland (Y/N)	Y – Boggy Lake Reserve

Remnant Vegetation	Y	Cross box	Coordinates	E
Restoration/Revegetation			Zone: 50	N

Site Vegetation							
Cross box	Woodland	Shrubland	Mallee heath	Forest	Open	Mid dense	Closed
Upper		XA Mel		XB	X B		XA
Mid				XB	X B		
Lower							
Ground				XB	X B		

Land Formation	Level	X	Gentle	X	Moderate	
Cross box	Steep		Very steep		Precipitous	
Wetlands/creek present (describe)	Y Melaleuca wetland					

Disturbance/Threats Y/N	Animal paths	?	Stock grazing	Y poss	Flooding	poss
	Erosion	N	Recent fire (<2 yrs)	N	Weeds	poss
	Salinity	?	Dieback disease	N		
Other notes	Remotely surveyed, remnant link up					

FLORA - DOMINANT SPECIES
<i>Eucalyptus marginata</i> (Jarrah), <i>Corymbia calophylla</i> (Marri), <i>Melaleuca species</i>
FAUNA SPECIES

SITE NO.	AREA (hectares)/ PERIMETER (metres)	VEGETATION TYPE	VEGETATION CONDITION 1-VERY DEGRADED TO 5-EXCELLENT	PRIORITY FOR MANAGEMENT LOW, MEDIUM, HIGH, VERY HIGH
B9	1.2 ha/831 m	Jarrah-marri open forest & Melaleuca wetland	2.5 – Degraded to Fair/Good	High

PHOTOS & DESCRIPTOR



Site B9: 1.2-hectare unfenced Melaleuca wetland connects to neighbouring remnant vegetation reserve containing Boggy Lake. Image 9316.



Site B9: Some Eucalypts, predominantly *Corymbia calophylla* (Marri), in poor condition potentially due to heat stress. Image 9317.

MANAGEMENT RECOMMENDATIONS AND/OR REASON FOR PRIORITY

Site B9 - Project 3 – 915 m fencing

High priority for fencing to exclude stock due to remnant vegetation condition, species composition, occurrence of a wetland and connectivity with Boggy Lake Reserve.

Looks dry & browned off – *Melaleuca species* (medium shrub) and *Corymbia calophylla* (Marri) possibly due to heat scorch in December 2019 and March 2020.

Recommend creating revegetated corridor link to Boggy Lake Reserve.

SITE A8, A6, A7, A3, A5 – LOT 2067			
Date: Tuesday 22 nd Sept 2020		Recorder/s: Melissa Howe, Basil Schur, Andrew & Angela Dickinson	
Photo numbers	A8: 9323 A6: 9324 A7: 9326 A3: 9327-9328, 9332	Connectivity to other bushland (Y/N)	N

Remnant Vegetation	Y	Cross box	Coordinates	E
Restoration/Revegetation			Zone: 50	N

Site Vegetation							
Cross box	Woodland	Shrubland	Mallee heath	Forest	Open	Mid dense	Closed
Upper				X	X		
Mid (sub-canopy)				X	X		
Lower							
Ground				X weeds		X	

Land Formation	Level		Gentle	X	Moderate	X
Cross box	Steep		Very steep		Precipitous	
Wetlands/creek present (describe)	N					

Disturbance/Threats Y/N	Animal paths	Y	Stock grazing	Y	Flooding	N
	Erosion	N	Recent fire (<2 yrs)	N	Weeds	Y understorey
	Salinity	N	Dieback disease	?		
Other notes						

FLORA - DOMINANT SPECIES
<i>Eucalyptus marginata</i> (Jarrah), <i>Corymbia calophylla</i> (Marri)

FAUNA SPECIES

SITE NO.	AREA (hectares)/ PERIMETER (metres)	VEGETATION TYPE	VEGETATION CONDITION 1-VERY DEGRADED TO 5-EXCELLENT	PRIORITY FOR MANAGEMENT LOW, MEDIUM, HIGH, VERY HIGH
A8, A6, A7, A3, A5	A8: 8.5 ha/1247 m A6: 7.7 ha/1439 m A7: 3.2 ha/849 m A3: 12.6 ha/1426 m 9327-9328, 9332	Jarrah-Marri open forest	2 - Degraded	Low

PHOTOS & DESCRIPTOR



Site A8: 8.5-hectare Jarrah-Marri remnant vegetation in degraded condition with no understorey. Image 9323.



Site A6: 7.7-hectare Jarrah-Marri remnant vegetation in degraded condition with no understorey. Image 9324.



Site A7: 3.2-hectare Jarrah-Marri remnant vegetation in degraded condition with no understorey. Image 9326.



Site A3: 12.6-hectare remnant vegetation in degraded condition with no understorey. Image 9327.



Site A3: Old growth Jarrah-Marri trees offer valuable habitat for hollow-dependent fauna despite lack of understorey and plant recruitment. Image 9332.

MANAGEMENT RECOMMENDATIONS AND/OR REASON FOR PRIORITY

Unfenced or fenced but stock allowed in

Low priority for fencing due to isolation, small size and degraded condition

Lack of understorey and no noticeable plant recruitment, weed understorey

SITE A1 & A2 – LOT 2067 - PROJECT 2			
Date: Tuesday 22 nd Sept 2020		Recorder/s: Melissa Howe, Basil Schur, Andrew & Angela Dickinson	
Photo numbers	A2: 9329-9331, 9333 A1: 9334-9335	Connectivity to other bushland (Y/N)	Y

Remnant Vegetation	Y	Cross box	Coordinates	E
Restoration/Revegetation			Zone: 50	N

Site Vegetation							
Cross box	Woodland	Shrubland	Mallee heath	Forest	Open	Mid dense	Closed
Upper				X	X		
Mid				X	X		
Lower							
Ground				X weeds		X	

Land Formation Cross box	Level	X	Gentle	X	Moderate	
	Steep		Very steep		Precipitous	
Wetlands/creek present (describe)		Y Melaleuca creekline/wetland				

Disturbance/Threats Y/N	Animal paths	Y roos	Stock grazing	Y poss	Flooding	N
	Erosion	N	Recent fire (<2 yrs)	N	Weeds	Y edge
	Salinity	N	Dieback disease	N		
Other notes						

FLORA - DOMINANT SPECIES
<i>Eucalyptus marginata</i> (Jarrah), <i>Corymbia calophylla</i> (Marri), <i>Melaleuca species</i> , <i>Banksia grandis</i> (Bull Banksia), <i>Nuytsia floribunda</i> (Christmas Tree/Moodjar), <i>Banksia littoralis</i> (Swamp Banksia)

FAUNA SPECIES
Forest Red-tailed Black-Cockatoo

SITE NO.	AREA (hectares)/ PERIMETER (metres)	VEGETATION TYPE	VEGETATION CONDITION 1-VERY DEGRADED TO 5-EXCELLENT	PRIORITY FOR MANAGEMENT LOW, MEDIUM, HIGH, VERY HIGH
A2 & A1	Site A2: 17 ha/1802 m Site A1: 7.2 ha/1251 m	Jarrah-Marri open forest & Melaleuca wetland	3 - Good	High

PHOTOS & DESCRIPTOR



Site A2: 17-hectare unfenced Jarrah-Marri open forest with Melaleuca wetland connected to Site A1 and a larger area of remnant vegetation to the north. Image 9329.



Site A2: Jarrah-Marri forest with minimal understorey. Image 9331.



Site A2: Edge of Jarrah-Marri remnant vegetation. Image 9333.



Site A1: 7.1-hectare unfenced Jarrah-marri remnant vegetation with Melaleuca wetland unfenced Jarrah-Marri open forest with Melaleuca wetland connected to Site A2 and a larger area of remnant vegetation to the north. Image 9334.



Site A1: Unfenced degraded condition Melaleuca and Banksia vegetation with no understorey. Image 9335.

MANAGEMENT RECOMMENDATIONS AND/OR REASON FOR PRIORITY

Site A1 and A2 - Project 2 – 826 m fencing

Fencing to exclude stock is recommended as a high priority due to large size and good connectivity of remnant vegetation to a large area of remnant vegetation to the north.

SITE A4 & A5? – LOT 2067			
Date: Tuesday 22 nd Sept 2020		Recorder/s: Melissa Howe, Basil Schur, Andrew & Angela Dickinson	
Photo numbers	9337-9341	Connectivity to other bushland (Y/N)	N

Remnant Vegetation	Y	Cross box	Coordinates	E
Restoration/Revegetation			Zone: 50	N

Site Vegetation							
Cross box	Woodland	Shrubland	Forest	Forest	Open	Mid dense	Closed
Upper	X			X	X		
Mid	X			X	X		
Lower							
Ground	X			X	X		

Land Formation Cross box	Level	X	Gentle		Moderate	
	Steep		Very steep		Precipitous	
Wetlands/creek present (describe)						

Disturbance/Threats Y/N	Animal paths	Y	Stock grazing	Y	Flooding	poss
	Erosion	N	Recent fire (<2 yrs)	N	Weeds	Y
	Salinity	Y	Dieback disease	N		
Other notes						

FLORA - DOMINANT SPECIES
<i>Melaleuca raphiophylla</i> (Freshwater Paperbark), <i>Melaleuca cuticularis</i> (Saltwater Paperbark), <i>Corymbia calophylla</i> (Marri) - fringing

FAUNA SPECIES

SITE NO.	AREA (hectares)/ PERIMETER (metres)	VEGETATION TYPE	VEGETATION CONDITION 1-VERY DEGRADED TO 5-EXCELLENT	PRIORITY FOR MANAGEMENT LOW, MEDIUM, HIGH, VERY HIGH
A4 & A5	A4: 0.4 ha/264 m A5: 0.9 ha/495 m	Melaleuca wetland	2.5 – Degraded to Good/Fair	Low

PHOTOS & DESCRIPTOR	
Site	Site
Site	Site

MANAGEMENT RECOMMENDATIONS AND/OR REASON FOR PRIORITY
Remnants used for stock shelter on occasion.

SITE A7, A9 & A10 – LOT 2067			
Date: Tuesday 22 nd Sept 2020		Recorder/s: Melissa Howe, Basil Schur, Andrew & Angela Dickinson	
Photo numbers	A7: 9344 A9: 9345 A10: 9346, 9353	Connectivity to other bushland (Y/N)	N

Remnant Vegetation	Y	Cross box	Coordinates	E
Restoration/Revegetation			Zone: 50	N

Site Vegetation							
Cross box	Woodland	Shrubland	Mallee heath	Forest	Open	Mid dense	Closed
Upper				X	X		
Mid				X	X		
Lower							
Ground							

Land Formation	Level		Gentle		Moderate	
Cross box	Steep		Very steep		Precipitous	
Wetlands/creek present (describe)	Y Melaleuca wetland					

Disturbance/Threats Y/N	Animal paths	Y	Stock grazing	Y	Flooding	poss
	Erosion	N	Recent fire (<2 yrs)	N	Weeds	Y
	Salinity	Y	Dieback disease	?		
Other notes						

FLORA - DOMINANT SPECIES
<i>Eucalyptus marginata</i> (Jarrah), <i>Corymbia calophylla</i> (Marri), <i>Melaleuca raphiophylla</i> (Freshwater Paperbark), <i>Persoonia longifolia</i> (Snotty gobble)

FAUNA SPECIES
Rosella, Forest Red-tailed Black-cockatoo

SITE NO.	AREA (hectares)/ PERIMETER (metres)	VEGETATION TYPE	VEGETATION CONDITION 1-VERY DEGRADED TO 5-EXCELLENT	PRIORITY FOR MANAGEMENT LOW, MEDIUM, HIGH, VERY HIGH
A7, A9 & A10	A7: 3.2 ha/849 m A9: 1.1 ha/549 m A10: 40 ha/3384 m	Jarrah-Marri open forest Melaleuca wetland	2 – Degraded	Medium

PHOTOS & DESCRIPTOR



Site A7: 3.2-hectare unfenced Jarrah-Marri remnant vegetation with no understorey in degraded condition. Image 9344.



Site A9: 1.1-hectare unfenced Jarrah-Marri remnant vegetation with no understorey in degraded condition. Image 9345.



Site A10: 40-hectare unfenced Jarrah-Marri remnant vegetation in degraded condition with no understorey. Image 9346.



Site A10: Cattle sheltering in Jarrah-Marri remnant vegetation. Image 9346.



Cattle in wetland area. Image 9348



Very degraded Melaleuca wetland. Image 9347.

MANAGEMENT RECOMMENDATIONS AND/OR REASON FOR PRIORITY

Unfenced - Medium priority to fence larger remnant areas and wetland to exclude stock
 Excellent hollow-bearing trees, many in deteriorating condition
 Weedy understorey Wetland is in very degraded condition

SITE A18 & A19 – LOT 2067 – PROJECT 1

Date: Tuesday 22nd Sept 2020 **Recorder/s:** Melissa Howe, Basil Schur, Andrew & Angela Dickinson

Photo numbers	A18: 9356-9370 A19: 9371-9377	Connectivity to other bushland (Y/N)	Y
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Remnant Vegetation	Y	Cross box	Coordinates	E
Restoration/Revegetation			Zone: 50	N

Site Vegetation							
Cross box	Woodland	Shrubland	Mallee heath	Forest	Open	Mid dense	Closed
Upper	X-A Melaleuca			X-B	X-B	X-A	
Mid	X-A Melaleuca			X-B	X-B	X-A	
Lower	X-A					X-A	
Ground	X-A			X-B	X-B	X-A	

Land Formation	Level	X	Gentle		Moderate	
Cross box	Steep		Very steep		Precipitous	
Wetlands/creek present (describe)	Y Melaleuca wetland (lake)					

Disturbance/Threats Y/N	Animal paths	Y	Stock grazing	Y	Flooding	poss
	Erosion	N	Recent fire (<2 yrs)	N	Weeds	Y intermingled
	Salinity	Y	Dieback disease	Uninterpretable		
Other notes						

FLORA - DOMINANT SPECIES

Melaleuca preissiana (Stout Paperbark), *Melaleuca cuticularis* (Saltwater Paperbark), *Eucalyptus occidentalis* (Flat-topped Yate), White gum (sapling), Salt grass, *Juncus pallidus* (Pale rush), Marri (*Corymbia calophylla*), Jarrah (*Eucalyptus marginata*)

FAUNA SPECIES

Bobtail, Black swan, Emu (massive poo + feathers)

SITE NO.	AREA (hectares)/ PERIMETER (metres)	VEGETATION TYPE	VEGETATION CONDITION 1-VERY DEGRADED TO 5-EXCELLENT	PRIORITY FOR MANAGEMENT LOW, MEDIUM, HIGH, VERY HIGH
A18 & A19	A18: 2.7 ha/1047 m A19: 6.6 ha/1959 m	Riparian Yate and Melaleuca woodland Open jarrah-marri forest (fringing)	2.5/3 – Degraded to Good	High

PHOTOS & DESCRIPTOR



Site A18: David Taylor looks out at the Riparian Yate and Melaleuca wetland. Image 9356.



Site A18: Riparian Yate and Melaleuca wetland in degraded to good condition. Image 9368.



Site A18: Swan nest in wetland. Image 9358.



Site A18: Good condition fringing vegetation of *Melaleuca cuticularis* (Saltwater Paperbark) and *Eucalyptus occidentalis* (Flat-topped Yate). Image 9362.



Site A18: Survey team observe birdlife, vegetation type and condition of wetland area. Image 9364.



Site A18: Fence between paddocks and wetland recommended for replacement to exclude stock. Image 9369.



Site A18: Fence between paddocks and wetland recommended for replacement to exclude stock. Image 9370.



Unfenced Site A19: 6.6-hectare unfenced Yate and Melaleuca wetland in degraded to fair/good condition. Image 9372.



Site A19: Yate and Melaleuca wetland with sedge understorey species, *Juncus pallidus* (Pale Rush). Image 9373.



Site A19: David Taylor in front of riparian Yate and Melaleuca woodland recommended as a high priority for fencing. Image 9375.



Site A19: High priority for fencing due to connectivity with larger remnant vegetation. Image 9376.

MANAGEMENT RECOMMENDATIONS AND/OR REASON FOR PRIORITY

Site A18 & A19 – Project 1 – 1174 m fencing

Wetland site: Fencing to exclude stock is recommended as a high priority due to large size, species composition and good connectivity of remnant vegetation to a large area of remnant vegetation to the south (private property) which is directly connected to a larger area of remnant vegetation (Reserve 22442).

SITE B5: Extension of Caldwell Road Road Reserve – PROJECT 4			
Date: Tuesday 22 nd Sept 2020		Recorder/s: Melissa Howe, Basil Schur, Andrew & Angela Dickinson	
Photo numbers	9389	Connectivity to other bushland (Y/N)	Y – corridor to large area of remnant vegetation on northern boundary

Remnant Vegetation	Y	Cross box	Coordinates	E
Restoration/Revegetation			Zone: 50	N

Site Vegetation							
Cross box	Woodland	Shrubland	Mallee heath	Forest	Open	Mid dense	Closed
Upper	X				X		
Mid	X				X		
Lower	X				X		
Ground	X					X	

Land Formation Cross box	Level	X	Gentle		Moderate	
	Steep		Very steep		Precipitous	
Wetlands/creek present (describe)						

Disturbance/Threats Y/N	Animal paths	Y	Stock grazing	poss	Flooding	poss (road)
	Erosion	poss (road)	Recent fire (<2 yrs)	N	Weeds	edge
	Salinity	?	Dieback disease	?		
Other notes		Assessed remotely				

FLORA - DOMINANT SPECIES
<i>Eucalyptus occidentalis</i> (Flat-topped Yate), diverse understorey species
FAUNA SPECIES

SITE NO.	AREA (hectares)/ PERIMETER (metres)	VEGETATION TYPE	VEGETATION CONDITION 1-VERY DEGRADED TO 5-EXCELLENT	PRIORITY FOR MANAGEMENT LOW, MEDIUM, HIGH, VERY HIGH
B5	2.5 ha/3389 m	Yate woodland	4 – Very good	High

PHOTOS & DESCRIPTOR



Site B5: 2.5-hectare remnant vegetation in Caldwell Road reserve in very good condition. Image 9389.

MANAGEMENT RECOMMENDATIONS AND/OR REASON FOR PRIORITY
<p><u>Project 4 – 2484 m fencing</u></p> <p>Recommended as a high priority for fencing to exclude stock due to very good remnant vegetation condition, species composition and connectivity to other remnant vegetation to the north. If not all fenced then this undeveloped road reserve would be well worth protecting.</p>

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7. APPENDICES

APPENDIX 1: BIRD LIST FOR MORILLO FARM: SITES H AND L1 – LOT 2216 & RESERVE 22442

Bird Name	Sighted*	H1-H8	H5	H9	H12	H14	H15	H16	H17	L1
Australian Raven	X	X	X		X				X	
Australasian Shoveller										X
Australian Hobby	X									
Australian Magpie					X			X	X	
Australian Ring-neck Parrot	X	X			X			nuts	X	X
Black-faced Cuckoo Shrike	X									
Black Shouldered Kite	X									
Boobook Owl	X									
Brown Honeyeater			X							
Chestnut Teal										X
Crested Pigeon	X									
Eastern Barn Owl	X									
Emu	X									
Fan-tailed Cuckoo				X	X					
Forest Red-tailed Black-cockatoo				nuts						
Golden Whistler			X				X			
Grey Currawong	X									
Grey Fantail	X				X					X
Grey Shrike Thrush (Western)		X	X							
Hoary-headed Grebe										X
Inland Thornbill		X	X	X	X					
Laughing Kookaburra	X									
Mountain Duck										X
Muir's Corella	X									
New Holland Honeyeater	X									

Owlet Nightjar	X									
Peregrine Falcon	X									
Purple Crowned Lorikeet	X									
Red Capped Parrot	X									
Red Wattlebird					X					
Regent Parrot (smokers)					X				X	
Scarlet Robin	X									
Shining Bronze Cuckoo		X								
Splendid Fairy Wren	X									
Striated Pardalote		X			X		X			
Swamp Harrier										
Tawny-crowned Honeyeater		X								
Wedge tailed Eagle	X									
Weebill					X		X			
Western Gerygone		X	X	X	X	X	X			
Western Rosella	X									
White Faced Heron	X									
White tailed black cockatoo	X									
White-browed Scrub Wren										
Willy Wagtail	X									
Wood Duck	X									
Yellow-rumped Thornbill							X		X	X

****Sighted: Birds sighted by David Taylor on the property have generally been included in the 1st column. These have not been recorded during these surveys, but from observations he has made at other times.***

BIRD LIST FOR MORILLO FARM: SITES A, B AND J (J1 WETLAND) AND AT THE GATE TO LOT 2216

Bird Name	A1/2	A3	A18	A19	B7	B8	J1	J5	J7	GATE
Australasian Grebe										X
Australasian Shoveller							X			
Australian Hobby					X					
Australian Magpie	X					X			X	X
Australian Raven							X	X		
Australian Ring-neck Parrot	X		X	X		X		X	X	X
Black Duck				X						
Black faced Cuckoo Shrike								X		X
Brown Honeyeater				X		X				
Chestnut Teal			X				X			
Clamorous Reed Warbler										X
Crested Pigeon										
Emu	X	X	scat							
Eurasian Coot			X							
Fan-tailed cuckoo							X			
Forest Red-tailed Black Cockatoo	X					Roost?		X		
Golden Whistler								X		
Grey Butcherbird	X									
Grey Fantail				X					X	
Hoary-headed Grebe							X			
Inland Thornbill							X	X		
Laughing Kookaburra								X		
Mudlark	X									X
Muir's Corella										X
Pacific Black Duck										X
Red Wattlebird	X			X						
Regent Parrot (smokers)										X

Splendid Fairy Wren				X				X		
Striated Pardalote			X	X		X		X		
Tree Martin										X
Western Gerygone							X		X	
White-browed Scrub Wren								X		
Willy Wagtail							X			X
Wood Duck										X
Yellow-rumped Thornbill	X			X			X	X	X	

APPENDIX 3: VEGETATION CONDIITON SCALE

VERY DEGRADED - 1	DEGRADED - 2	GOOD - 3	VERY GOOD - 4	EXCELLENT - 5
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.	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; & grazing.	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; & grazing.	Vegetation structure altered; obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires; the presence of some more aggressive weeds; dieback; logging; & grazing.	Vegetation structure intact; disturbance affecting individual species; weeds are non-aggressive species.

Note: Condition scale adapted from Keighery Condition Scale (*Keighery, 1994 and Casson et al., 2009*).

Five central scores are mainly used from "VERY DEGRADED" (1) to "EXCELLENT" (5). At either side of these could be "ALIENATED" (A) and "PRISTINE" (P). In general, it is unlikely that "A" will apply because it refers to the built environment or land that is under agriculture or horticulture, which lacks any native plants and most other native organisms. In general, it is likely that "P" will not commonly be used because there are very few places that have not been subject to feral animal grazing (rabbits, camels, goats, etc) or that have remained unaffected by exacerbated wind-borne dust deposition, or emissions (*Casson et al., 2009*).

APPENDIX 4: VEGETATION SNAPSHOT SURVEY - 2020 SITE DATA FORM

SITE			
Date:		Recorder/s:	
Photo numbers		Connectivity to other bushland (Y/N)	

Remnant Vegetation		Tick box	Coordinates	E
Restoration/Revegetation			Zone: 50	N

Site Vegetation							
Tick box	Woodland	Shrubland	Mallee Heath	Heath	Open	Mid dense	Closed
Upper							
Mid							
Lower							
Ground							

Land Formation Tick box	Level		Gentle		Moderate	
	Steep		Very steep		Precipitous	
Wetlands/creek present (describe)						

Disturbance/Threats Tick boxes	Animal paths		Stock grazing		Flooding	
	Erosion		Recent fire (<2 yrs)		Weeds	
	Salinity		Dieback disease			
Other notes						

FLORA - DOMINANT SPECIES

FAUNA SPECIES

SITE NO.	AREA (hectares)/ PERIMETER (metres)	VEGETATION TYPE	VEGETATION CONDITION 1-VERY DEGRADED TO 5-EXCELLENT	PRIORITY FOR MANAGEMENT LOW, MEDIUM, HIGH, VERY HIGH

PHOTOS & DESCRIPTOR

MANAGEMENT RECOMMENDATIONS AND/OR REASON FOR PRIORITY