



CPS 9058/1 – Proposed Wongonderrah Road Offset Area Environmental Assessment

MEMO V1



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Background

The Shire of Dandaragan (the Shire) is proposing to widen a section of Jurien East Road between Cockleshell Gully Road and Indian Ocean Drive. The project was referred to the Department of Agriculture, Water and Energy (DAWE) and it was deemed to be a controlled action. In September 2020 the Shire submitted a Native Vegetation Clearing Permit application to DWER, and it is being assessed under the bilateral agreement.

DWER's preliminary assessment of the project identified that the area proposed to be cleared will impact on significant foraging habitat for Carnaby's Cockatoo (*Calyptorhynchus latirostris*) and native vegetation representative of the ecological community 'Banksia Dominated Woodlands of the Swan Coastal Plain IBRA region' (Banksia Woodland) listed as 'Priority 3(iii)' Priority Ecological Community by Department of Biodiversity Conservation and Attractions (DBCA) and as an 'Endangered' threatened ecological community (TEC) under the *Environment Protection and Biodiversity Conservation Act 1999*.

DWER indicated an offset is required to counterbalance the significant residual impacts of the proposed clearing i.e., clearing of approximately 3.59 hectares (ha) of significant foraging habitat for Carnaby's Cockatoo, and approximately 3.29 ha of native vegetation that is commensurate with Banksia Woodland TEC.

The Shire wishes to offset the project's significant residual impacts by transferring a portion of the western section of Wongonderrah Road reserve (which is vested in the Shire) to the conservation estate. The general location of the proposed offset area (red polygon) is shown on **Figure 1** along with the Jurien East Road project area. The western edge of the Wongonderrah Road polygon is approximately 6 km east of Indian Ocean Drive.

This memo report compares the physiography and the vegetation (type and condition) in the Jurien East Road project area with that in the approximately 1 km long western section of Wongonderrah Road reserve that was surveyed (the Wongonderrah Road Survey Area).

Desktop Assessment

Table 1 presents background information on the IBRA bioregions and subregions, soil landscape mapping units, pre-European vegetation association and system association, wetlands, DBCA Legislated Lands and Waters, native vegetation extent and potential Carnaby's Cockatoo habitat and breeding grounds in and around the Wongonderrah Road Survey Area.

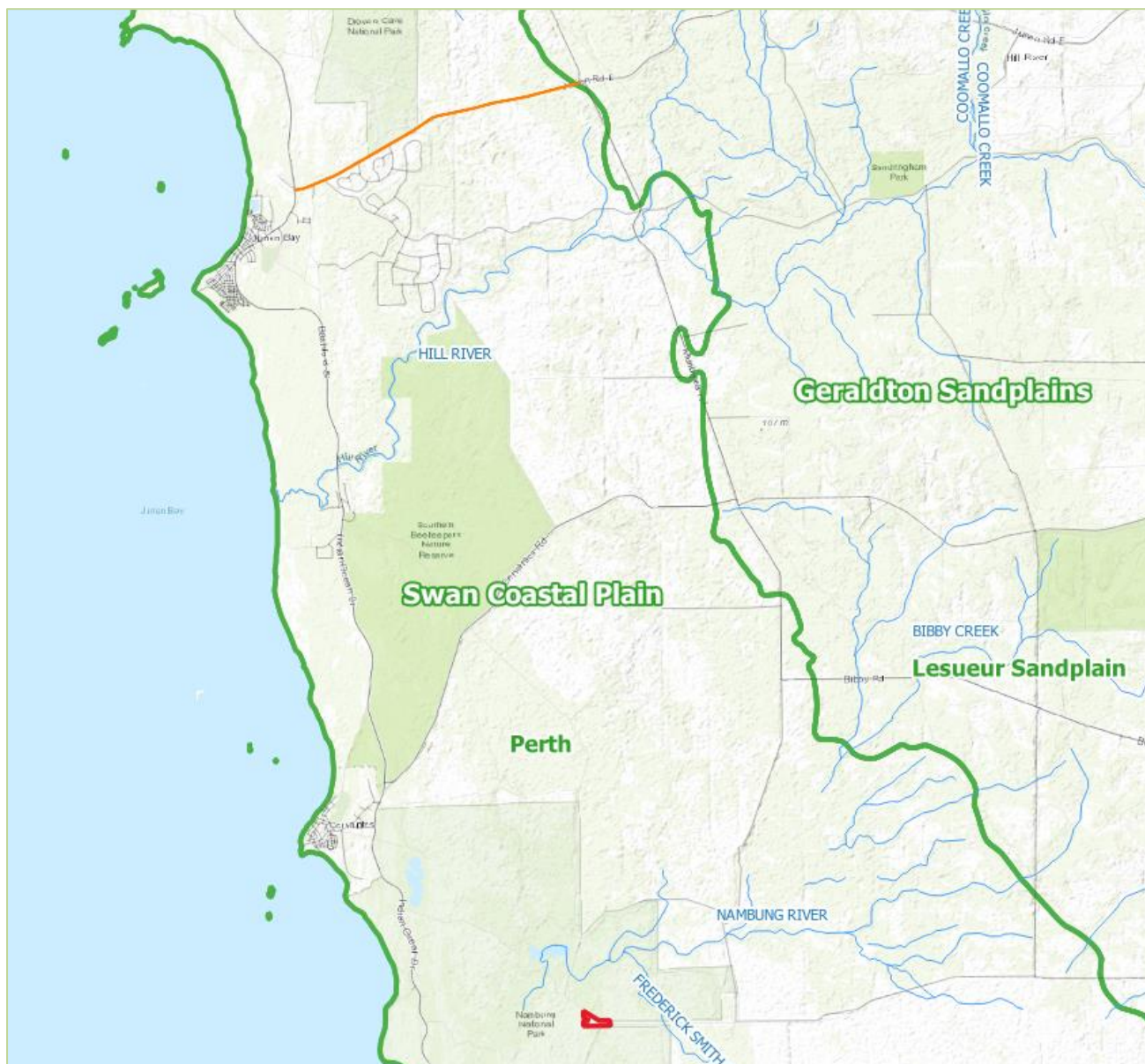

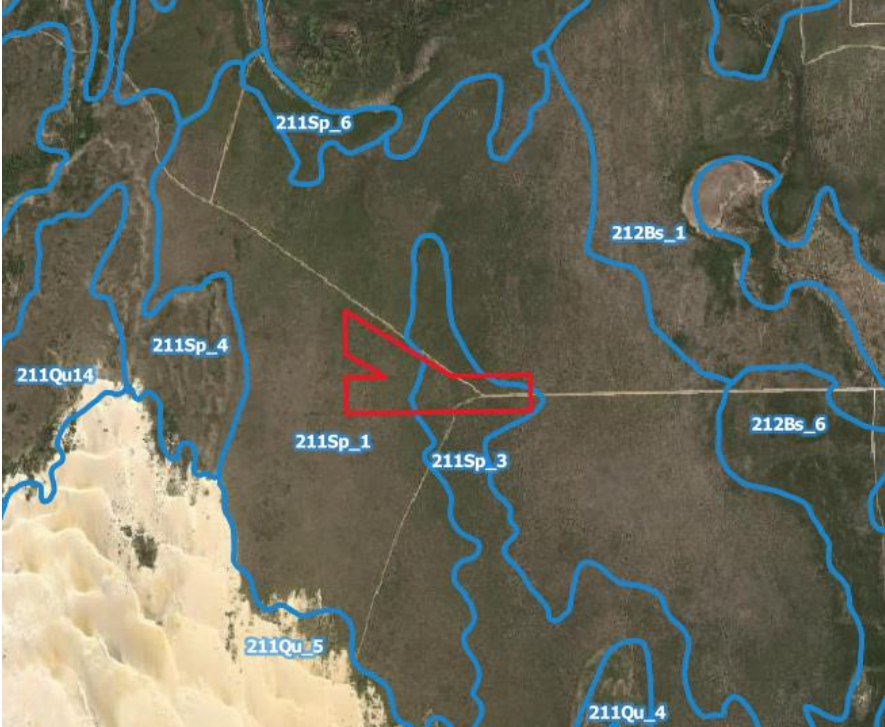


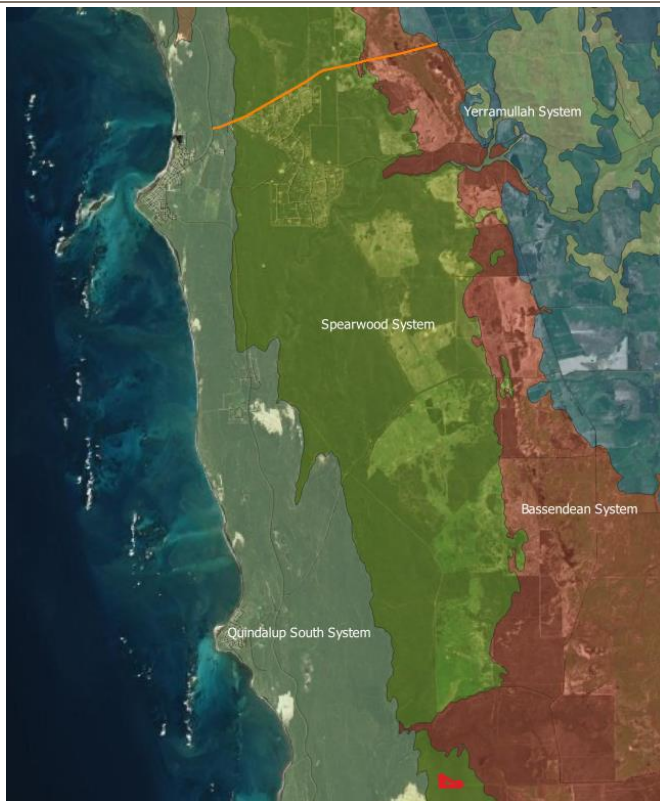
Figure 1: General location of the proposed Wongonderrah Road offset area (red polygon) and Jurien East Road project area (orange line)

Table 1: Background information

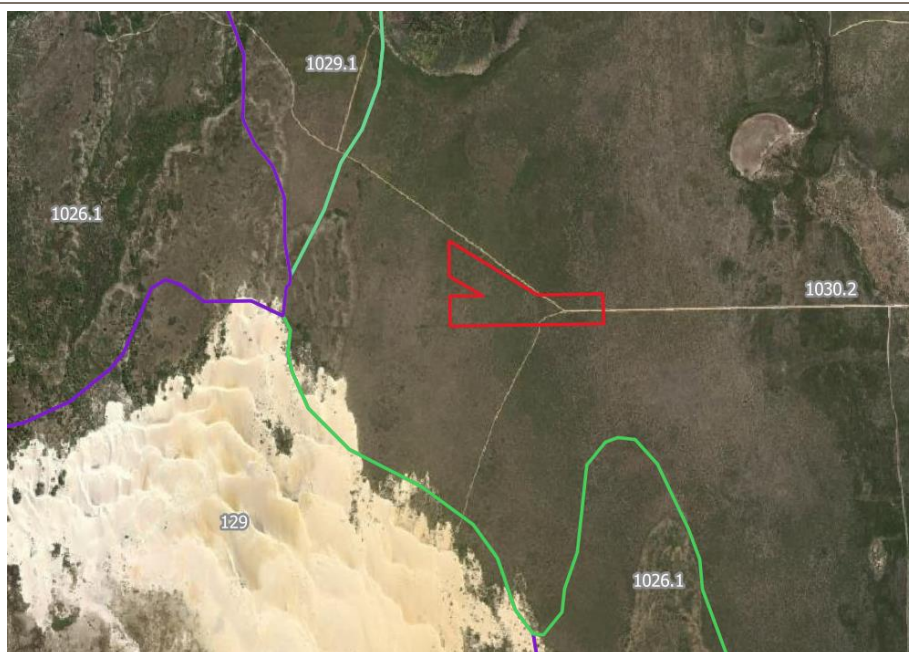
Background information on the Wongonderrah Road Survey Area
<p>IBRA bioregion and subregion. The Wongonderrah Road Survey Area is in the Perth subregion of the Swan Coastal Plain bioregion (DotEE, 2016).</p> <p>The Jurien East Road project area lies mostly in the Perth subregion of the Swan Coastal Plain bioregion (the eastern approximately 180 m is in the Lesueur Sandplain subregion of the Geraldton Sandplains bioregion) (Figure 1).</p>

<p>Soil landscape mapping units. Two soil-landscape units are mapped in the Wongonderrah Road Survey Area (DPIRD, 2021a):</p> <ul style="list-style-type: none">• Spearwood System 211Sp_3: Complex of deep yellow sands and shallow sands, no limestone outcrop.• Spearwood System 211Sp_1: Deep yellow sands.


Background information on the Wongonderrah Road Survey Area

More than 50% of the Jurien East Road project area (orange line below) is in the Spearwood System (211Sp), and soil-landscape units 211Sp_1 and 211Sp-3 occur in that section also (Maia and Western Wildlife, 2020).

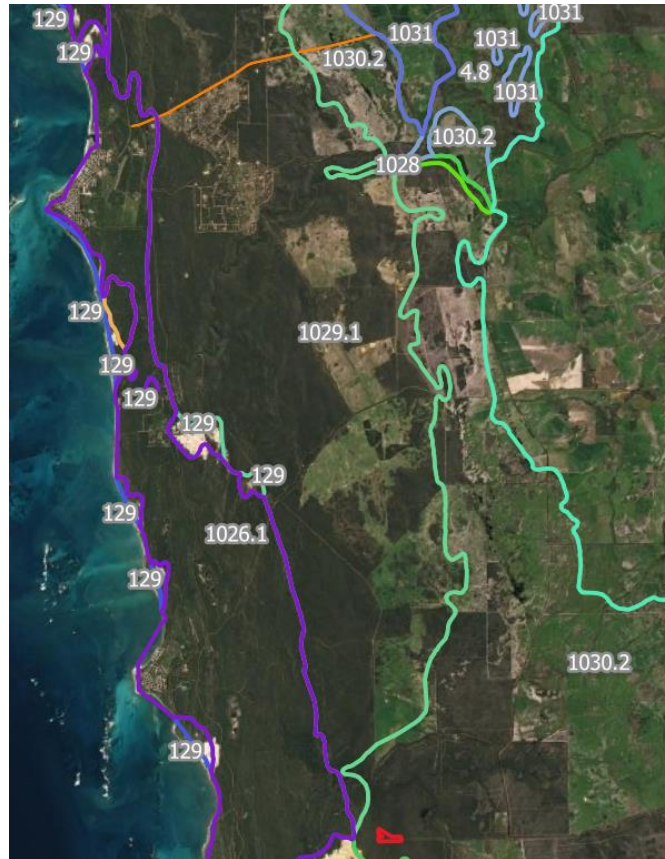


Pre-European vegetation. The Wongonderrah Road Survey Area (red polygon) is in the Bassendean System, in Beard vegetation association 1030 and Beard vegetation system association 1030.2 (DPIRD, 2021b). Its structure is Low woodland or open low woodland, and its floristic description is: Other acacia, banksia, peppermint, cypress pine, casuarina, York gum, *Acacia* spp., *Banksia* spp., *Agonis flexuosa*, *Callitris* spp., *Allocasuarina* spp., *Eucalyptus loxophleba*.

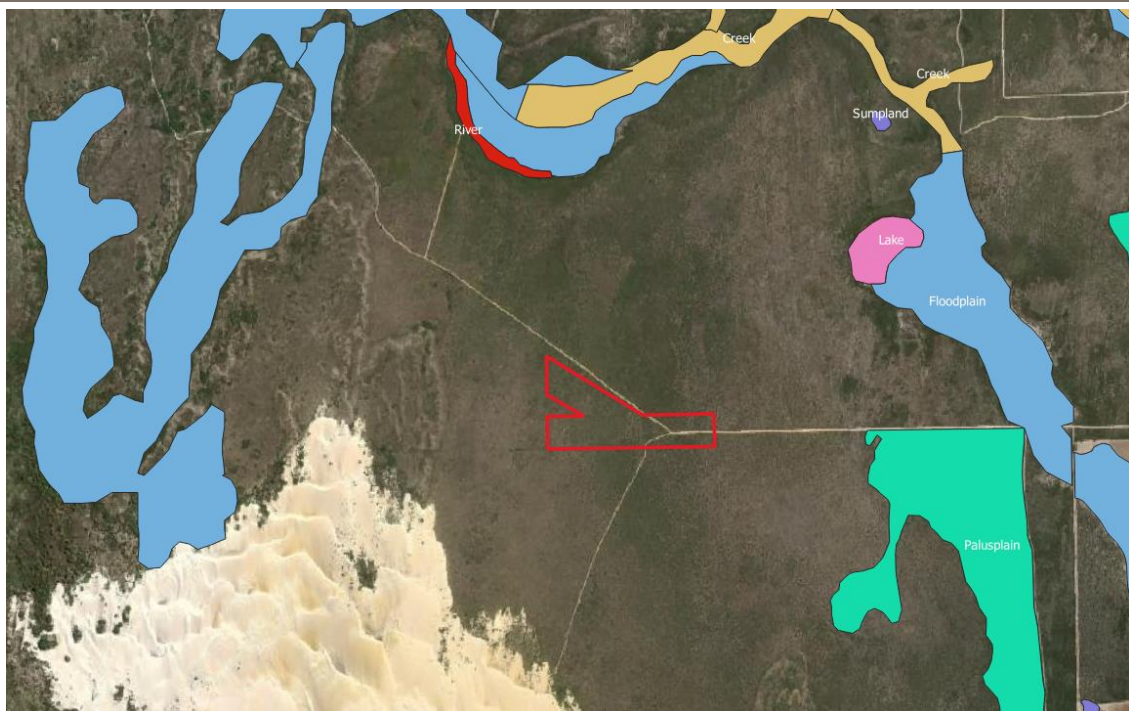


Background information on the Wongonderrah Road Survey Area

Approximately one third of the Jurien East Road project area (orange line below) is in the same vegetation system association - 1030.2.



Wetlands. No wetlands occur in the Wongonderrah Road Survey Area; however, it is surrounded by areas mapped as Geomorphic Wetlands (floodplain and palusplain) (Geomorphic Wetlands Cervantes South; DBCA, 2021a).



Background information on the Wongonderrah Road Survey Area

DBCA Legislated Lands and Waters. The Wongonderrah Road Survey Area is surrounded by Nambung National Park, (green fill below) (DBCA, 2021b).



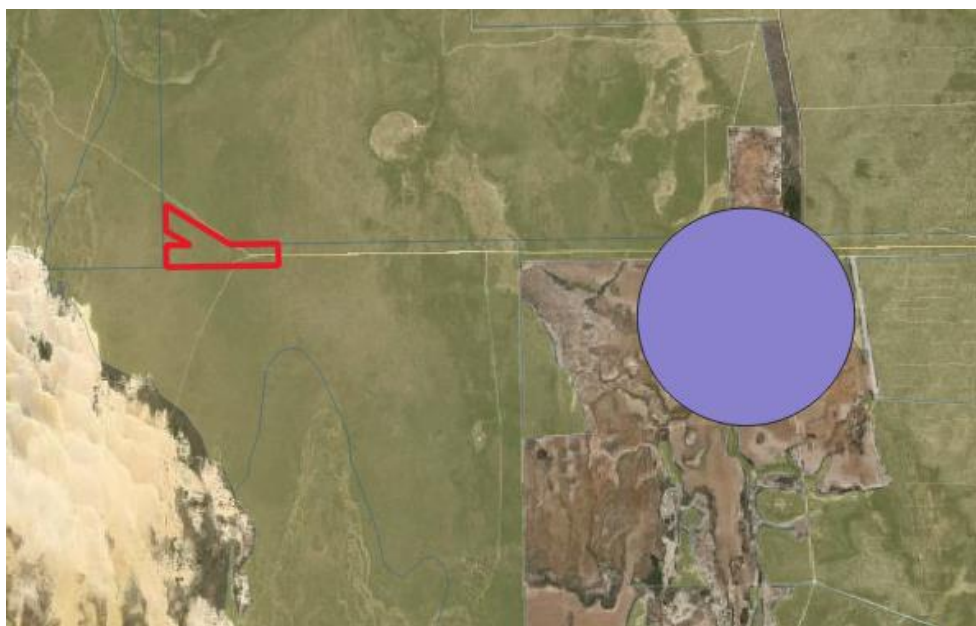
Native Vegetation Extent. A large area of land in the section of vegetation system association 1030.2 in which the Wongonderrah Road Survey Area lies, comprises intact native vegetation (green shading; DPIRD, 2021c).



Background information on the Wongonderrah Road Survey Area

Carnaby's Cockatoo potential feeding habitat, breeding and roosting ground

- The Survey Area is in an area indicated as Carnaby's Cockatoo Areas requiring investigation as feeding habitat in the Swan Coastal Plain (shaded yellow) (DBCA, 2021c).
- The Survey Area is approximately 3.5 km west of a Black Cockatoo roosting site (purple area) (DBCA, 2021d). The closest confirmed Carnaby's Cockatoo roosting site is approximately 63 km south-east of the Survey Area (DBCA, 2021d).
- The Survey Area is not in or close to a buffer around a known Carnaby's Cockatoo Breeding Area. The closest Breeding Area buffer is approximately 26 km south-east of the Survey Area (Australian Government, 2021).



Jurien East Road Reserve Project Area Vegetation Types and Condition

Eleven vegetation types were mapped in Jurien East Road project area and 10 of them were in the area to be cleared / application area / PCZ (Maia and Western Wildlife, 2020; **Table 2**).

Table 2: Vegetation types of the Jurien East Road Reserve Project and Application Area

Vegetation type code - broad floristic formation	Survey Area		Application Area (PCZ)	
	Area (ha)	Cover (%)	Area (ha)	Cover (%)
BLOFLWL: <i>Banksia</i> Low Open Forest to Low Woodland	33.41	44.01	3.66	16.42
ETOF: <i>Eucalyptus</i> Tall Open Forest	1.29	1.70	0.19	0.85
ETOMF: <i>Eucalyptus</i> Tall Open Mallee Forest	0.37	0.49	0.05	0.22
MLOSL (1): Mixed Low Open Shrubland	0.69	0.91	0	0
MLOSL (2): Mixed Low Open Shrubland	0.33	0.43	0.03	0.13
MOSL (1): Mixed Open Shrubland	2.54	3.35	0.41	1.84
MOSL (2): <i>Melaleuca</i> Open Shrubland	0.58	0.76	0.05	0.22
MSL: Mixed Shrubland	1.51	1.99	0.05	0.22
MTSL (1): <i>Melaleuca</i> Tall Shrubland	3.05	4.02	0.53	2.38
MTSL (2): Mixed Tall Shrubland	9.03	11.90	0.27	1.21
TLSSSL: <i>Tecticornia</i> Low Sparse Samphire Shrubland	0.13	0.17	0.01	0.04
Native vegetation	52.93	69.73	5.25	23.55
Cleared and disturbed	22.98	30.27	17.04	76.45
TOTAL	75.91	100	22.29	100

Native vegetation condition in the application area (excluding disturbed areas) was mapped as Good (70.5%) and Very Good (29.50%).

Table 3: Vegetation condition in the Jurien East Road Application Area

Vegetation type code: broad floristic formation	Condition (area and % of PCZ native vegetation)			
	Very Good		Good	
	Area (ha)	Cover (%)	Area (ha)	Cover (%)
BLOFLWL: <i>Banksia</i> Low Open Forest to Low Woodland	1.30	24.78	2.36	44.95
ETOF: <i>Eucalyptus</i> Tall Open Forest	0	0	0.19	3.54
ETOMF: <i>Eucalyptus</i> Tall Open Mallee Forest	0	0	0.05	0.95
MLOSL (1): Mixed Low Open Shrubland	0	0	0	0
MLOSL (2): Mixed Low Open Shrubland	0	0	0.03	0.58
MOSL (1): Mixed Open Shrubland	0.20	3.80	0.21	4.04
MOSL (2): <i>Melaleuca</i> Open Shrubland	0.03	0.57	0.02	0.43
MSL: Mixed Shrubland	0.02	0.35	0.03	0.65
MTSL (1): <i>Melaleuca</i> Tall Shrubland	0	0	0.53	10.07
MTSL (2): Mixed Tall Shrubland	0	0	0.27	5.14
TLSSSL: <i>Tecticornia</i> Low Sparse Samphire Shrubland	0	0	0.01	0.15
Native vegetation	1.55	29.50	3.70	70.50
Cleared and disturbed	0			
TOTAL	N/A			

*PCZ = Application Area.

Wongonderrah Road Reserve Vegetation Type Reconnaissance Survey

The Wongonderrah Road Survey Area was assessed by four botanists on June 3, 2021. To compare the vegetation in the Survey Area with that in the Jurien East Road application area, a reconnaissance survey was carried out and the vegetation was assessed at 33 rapid assessment sites within an approximately 30 ha block of vegetation that comprises the western 1 km (approximately) of the Wongonderrah Road reserve (**Map 1, Maps**). The botanists walked traverses between rapid assessment sites within the Survey Area.

The botanists collected the following information:

- Location details including Global Positioning System (GPS) co-ordinates (GDA94) at each rapid assessment site.
- Notes on parameters such as soils, topography and general habitat, rock type and cover.
- At least one photograph across each site.
- A description of the vegetation structure including the height, percentage cover and dominant species within each stratum.
- Vegetation condition (using the scale and criteria for the South West and Interzone Botanical Provinces (EPA, 2016)).
- Notes on any disturbances to the vegetation, if any were apparent.

Vegetation type and condition maps (**Maps 1 and 2; Maps**) were produced using the information collected at the rapid assessment sites and any other information collected while walking from site to site. The vegetation type occurring in the Survey Area was compared with those mapped in the Jurien East Road project area (Maia and Western Wildlife, 2020). One of the 11 vegetation types mapped in the Jurien East Road project area occurs in the Wongonderrah Road Survey Area – *Banksia* Low Open Forest to Low Woodland (BLOFLWL). This vegetation

type was mapped over 98.39% of the Wongonderrah Road Survey Area (**Table 4; Map 1, Appendix 1**); only 1.61% of the Survey Area was mapped as Disturbed.

Vegetation condition was Pristine (98.39% of the Survey Area), while the tracks were mapped as Completely Degraded (1.61% of the Survey Area).

Table 4: Vegetation mapping (type and condition) in the Wongonderrah Road Survey Area – area and cover

Vegetation type	Vegetation condition	Area (ha)	Cover (%)
BLOFLWL	Pristine	29.60	98.39
Disturbed	Completely Degraded	0.48	1.61
Total		30.08	100

A detailed description for the vegetation type occurring in the Wongonderrah Road Survey Area along with associated information is presented in **Table 5**.

While some of the species recorded in the Wongonderrah Road Survey Area *BLOFLWL* are different from those recorded in the Jurien East Road project area, the vegetation type is the same i.e., *Banksia* Low Open Forest to Low Woodland.

BLOFLWL, *MSL* and *ETOMF* were the vegetation types identified as providing foraging habitat for Carnaby's Cockatoo in the Jurien East Road project area, and *BLOFLWL* and *ETOMF* were vegetation types representative of the *Banksia* Dominated Woodlands of the Swan Coastal Plain threatened ecological community (TEC). The Wongonderrah Road Survey Area comprises one vegetation type – *BLOFLWL* – which is both foraging habitat for Carnaby's Cockatoo and vegetation representative of the *Banksia* Dominated Woodlands of the Swan Coastal Plain TEC.

Before going to site to carry out the survey the boundaries for potentially different vegetation types were digitized using satellite imagery. However, while carrying out the reconnaissance survey, it became obvious that the same vegetation type occurred across the whole of the Survey Area, and that the cover of the canopy of the dominant *Banksia* tree species (*Banksia prionotes*) varied rather than the vegetation type. *Banksia* canopy cover was low (< 2%) in the south-west of the Survey Area and higher in the remainder of the Survey Area (from 2% to 70%). The different *Banksia* covers across the Survey Area is shown on **Map 1 (Maps)**, and photographs of the different covers recorded are included in **Table A1, Appendix 1**. Note that while not mapped as a discrete cover patch, in some areas *Banksia* canopy cover was greater than 70%.

While carrying out the survey a flock of between 100 and 200 Carnaby's Cockatoo flew over the area and there was evidence over much of the site of cockatoo foraging in the area (**Table A2, Appendix 1**).

Banksia prionotes was the only *Banksia* tree / tall shrub species located in the western section of the Survey Area. *Banksia attenuata* was recorded for the first time close to and within the 'Y' formed by the two tracks (site WR654) and then eastwards in the Survey Area, however, it was not a dominant species. At about this point in the Survey Area other species noted as being typical of some *Banksia* Woodland TEC occurrences in the Swan Coastal Plain were recorded e.g., *Eucalyptus tottiana* and *Xylomelum angustifolium*; these species were not recorded in the areas assessed in the western section of the Survey Area.

Table 5: Vegetation of the Wongonderrah Road Survey Area

Code, broad floristic formation, vegetation type description and habitat	Associated information
<p>Code: BLOFLWL</p> <p>Broad floristic formation: <i>Banksia</i> Low Open Forest to Low Woodland.</p> <p>Vegetation type: Low Open Forest to Low Woodland of <i>Banksia prionotes</i> with a mixed Shrubland mainly of <i>Melaleuca systema</i>, <i>Banksia leptophylla</i> var. <i>melletica</i> and <i>Acacia spathulifolia</i> and a Sparse Sedgeland to Isolated Sedges of <i>Mesomelaena pseudostygia</i> and <i>Morelotia octandra</i>.</p> <p>Habitat: Slopes and depressions of dunes of the Spearwood System.</p>	<p>Associated species: <i>Acacia rostellifera</i>, <i>Banksia attenuata</i>, <i>Desmocladus castaneus</i>., <i>Petrophile brevifolia</i>, <i>Petrophile macrostachya</i>, <i>Petrophile serruriae</i>, <i>Jacksonia spinosa</i>, <i>Hakea prostrata</i>, <i>Hakea incrassata</i>, <i>Hakea trifurcata</i>, <i>Spyridium globulosum</i>, <i>Cassytha aurea</i> var. <i>hirta</i>, <i>Xylomelum angustifolium</i>, <i>Daviesia divaricata</i> subsp. <i>divaricata</i>, <i>Callitris arenaria</i>, <i>Leucopogon</i> ? Sp. <i>Coomallo</i>, ?<i>Conospermum</i> sp., <i>Acacia</i> ? <i>truncata</i>.</p> <p>Sites: All sites assessed in the Survey Area.</p> <p>Average Vegetation condition: Pristine; no weeds were located, there were no signs of grazing and no clearing other than for the tracks (mapped as disturbed).</p>



Conclusions

This desktop assessment demonstrates that the Wongonderrah Road Survey Area has many of the same physiographical attributes as sections of the Jurien East Road project area.

The information collected from the Survey Area demonstrates that the broad floristic formation for the one vegetation type occurring in the Survey Area (*Banksia* Low Open Forest to Low Woodland, *BLOFLWL*) is the same as one of the 11 floristic formations mapped in the Jurien East Road project area (*BLOFLWL*). This vegetation type provides Carnaby's Cockatoo foraging habitat in the Jurien East Road project area, and it is representative of the *Banksia* Woodlands TEC in the Jurien East Road project area.

Vegetation condition in the Wongonderrah Road Survey Area is pristine, while the Jurien East Road application area was mostly (70.5%) in good condition (the remaining 29.5% was very good).

Based on the information above the Wongonderrah Road Survey Area would be an excellent offset area for the Jurien East Road project.

The offset area proposed within the Wongonderrah Road Survey Area is shown on **Map 3 (Maps)**. The offset polygon has been selected to facilitate its excision from the road reserve and to exclude any of the existing tracks.

References

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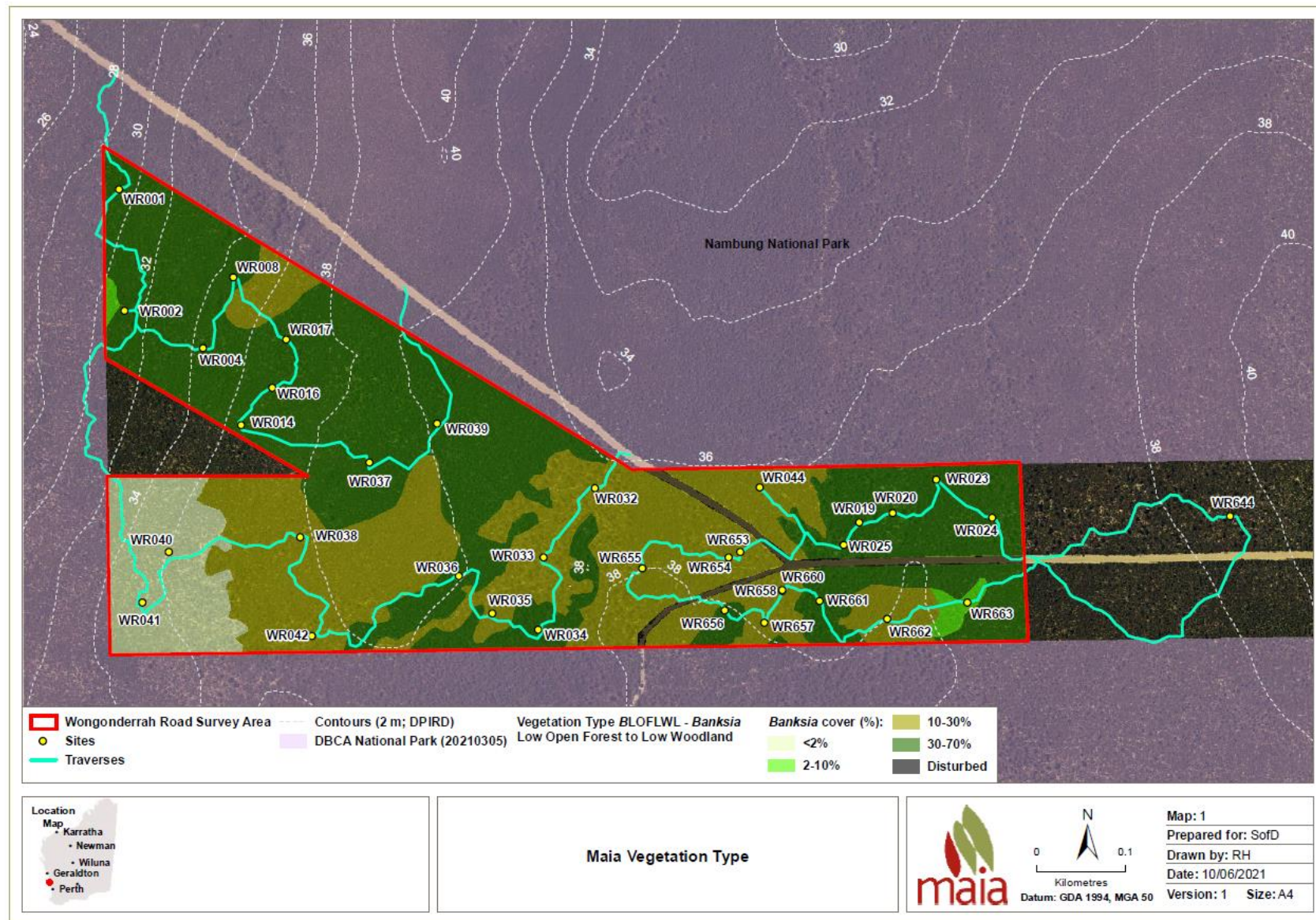
Maia Environmental Consultancy and Western Wildlife (2020). Shire of Dandaragan: Jurien East Road; Cockleshell Gully Road to Indian Ocean Drive Flora and Vegetation Reconnaissance Survey and Targeted Flora and Fauna Survey. July, 2020.

Memo prepared by:

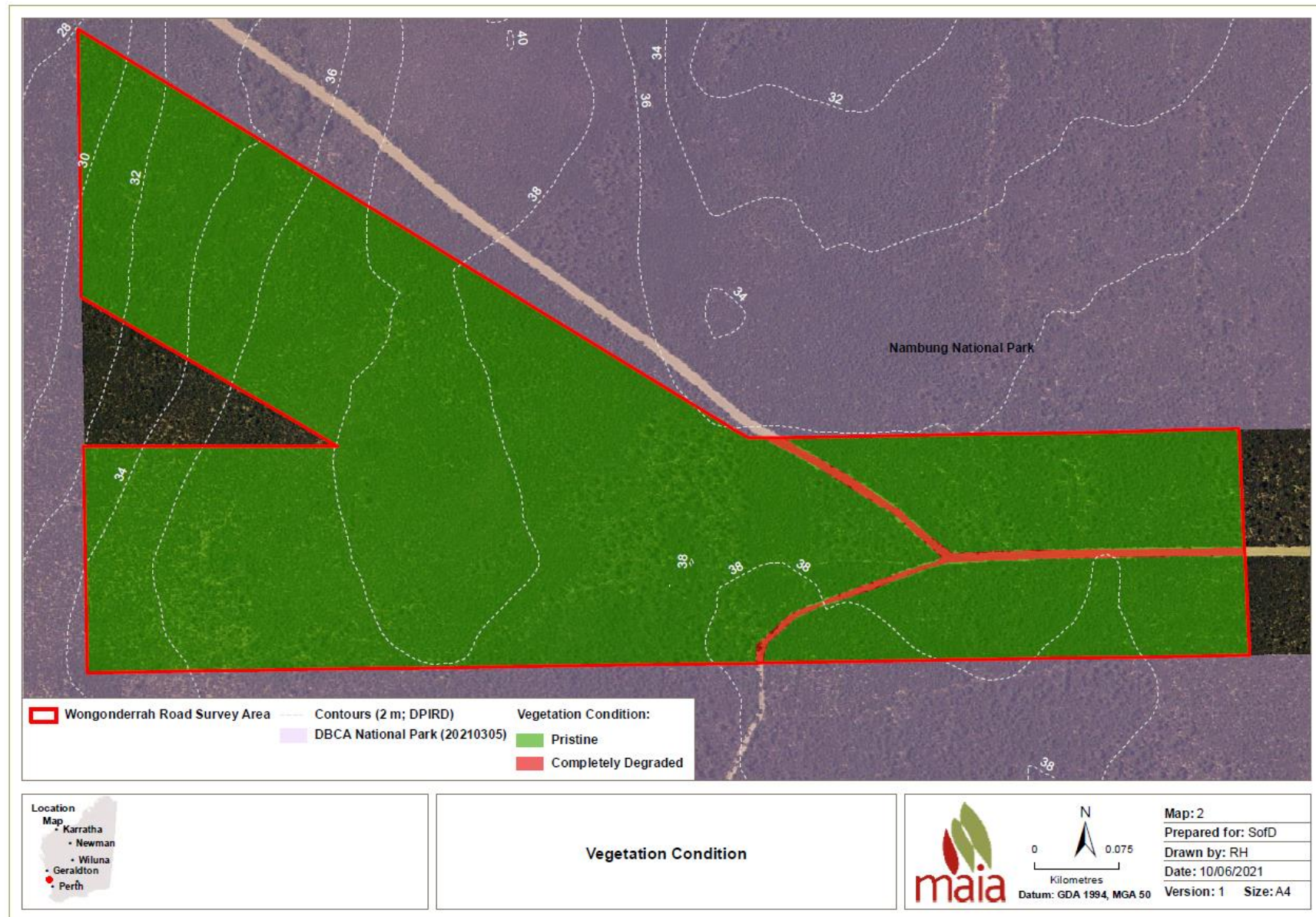
Christina Cox, Scott Hitchcock, Eva Karikis and Rochelle Haycock. Plant collections were determined by Conrad Slee.

Maps

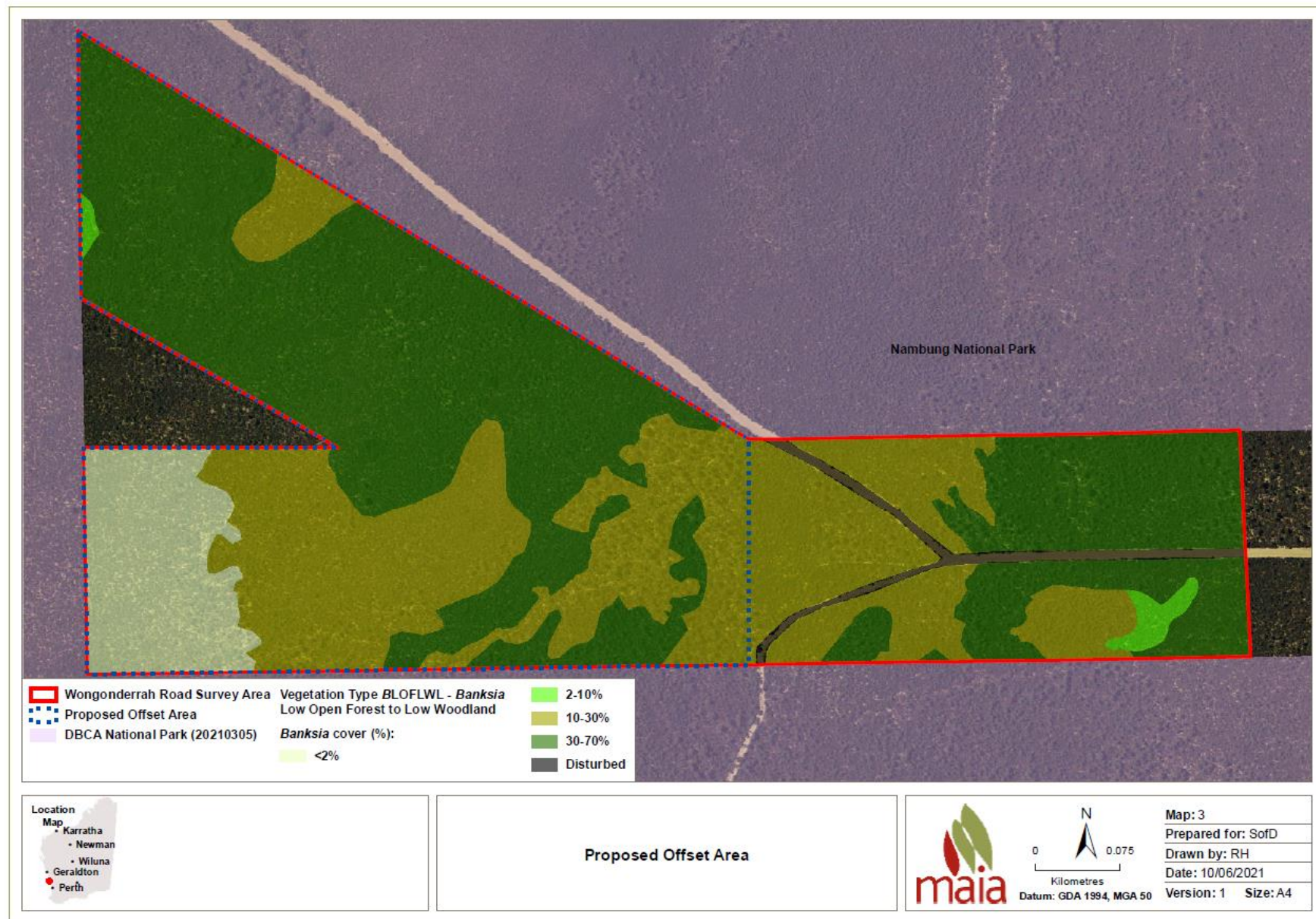
Map 1: Vegetation, Assessment Sites, Traverses and Banksia Cover – Wongonderrah Road Survey Area



Map 2: Vegetation Condition









Map 3: Proposed Offset Area

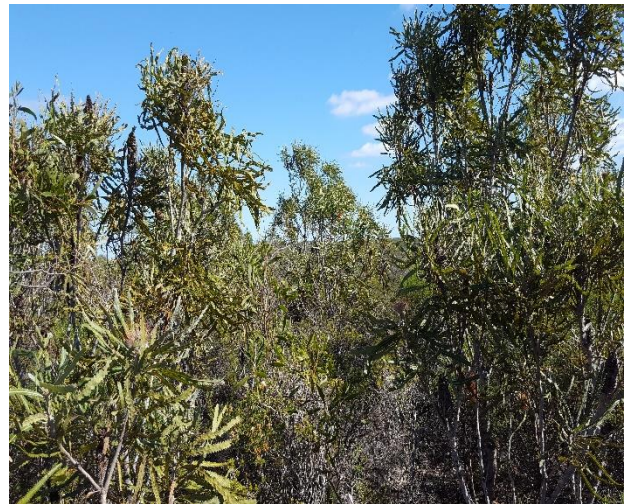


Appendix 1

Table A1: *Banksia* canopy cover

Banksia cover <2%, Rapid Assessment Site (RAS) WR014C	
	
Banksia cover 2-10%, RAS WR002B	
	
Banksia cover 10-30%, RAS WR035	
	

Banksia cover 30-70%, RAS WR016F



Banksia cover >70%, RAS WR560



Table A2: Carnaby's Cockatoo presence in the Wongonderrah Road Survey Area

Carnaby's Cockatoo in the Survey Area



Carnaby's Cockatoo foraging evidence

