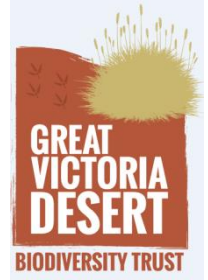
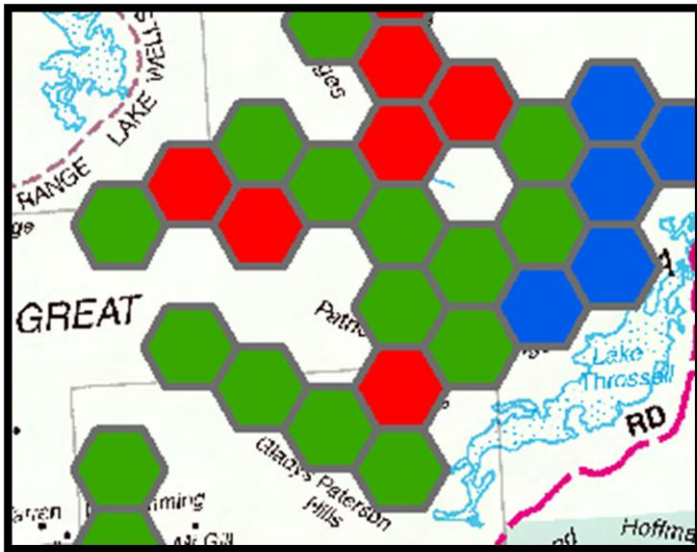




Department of
Parks and Wildlife



Defining a baseline survey design for the Sandhill Dunnart (*Sminthopsis psammophila*) in the Great Victoria Desert of Western Australia



MAY 2016

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ACKNOWLEDGEMENTS

Thanks to the following people for providing data, publications and advice: Belinda Bastow, Peter Copley, Mark Cowan, Glen Gaikhorst, Lesley Gibson, Cathy Lambert, Xavier Moreau, Katherine Moseby, Amy Mutton, David Pearson, John Read, Jeff Turpin, Matthew Ward and Matthew Williams.

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Introduction

Little is known about the distribution, abundance, habitat preferences and the effects of fire and feral predators on the sandhill dunnart (*Sminthopsis psammophila*) in Western Australia (Churchill 2001a). To date, the limited number of surveys and impact assessments targeting the sandhill dunnart in the Great Victoria Desert (GVD) of Western Australia have been highly localised, and capture rates have been low (Department of Parks and Wildlife 2016). The small number of detections of the sandhill dunnart, combined with the lack of geographical coverage of these locations, makes it difficult to draw inferences about the likelihood of detecting the dunnarts in the broader GVD. A comprehensive and systematic baseline survey is needed to address this data deficiency, and to make progress towards building a statistically robust habitat suitability model. This process will be iterative with improvements made as additional presence / absence data of sandhill dunnarts become available.

This report has two major components. First, historical survey data and the locations for sandhill dunnart observations were examined to assess potential habitat associations. Second, a quantitative baseline survey was designed to indicate placement of new survey sites where the sandhill dunnart may occur.

Methods

HISTORICAL SURVEYS

Surveys undertaken in the GVD of Western Australia, either targeting sandhill dunnarts, or general fauna surveys where sandhill dunnarts may have been present, were collated. Detailed information on these surveys is presented in Department of Parks and Wildlife (2016). The coordinates for the sites surveyed and sandhill dunnart observations were mapped in QGIS 2.8 (GDA94, Albers projection) and kernel density estimation was used to create 'heatmaps' within a 2 km radius. The aim of this analysis was to determine the extent of spatial bias in survey effort.

SANDHILL DUNNART OBSERVATIONS

Sandhill dunnart detections were mapped in ArcMap 10.1 and the 'integrate' (Data Management Toolbox) and 'collect events' (Spatial Statistics Toolbox) tools were used to pool observations within 2 km of each other. This analysis was used to estimate the total number of independent locations where sandhill dunnarts have been detected to date, by filtering out spatially auto-correlated observations (Boria *et al.* 2014). Sites located at least 2 km apart are considered independent based on estimates of sandhill dunnart home range size (Read *et al.* 2015).

The resulting locations were mapped with graduated circles representing the number of detections made at each point. QGIS 2.8 was then used to create a minimum concave hull of the detection locations to estimate the area of occupancy based on known locations of sandhill dunnarts.

GEOPHYSICAL ANALYSIS

In ArcMap, detection locations of the sandhill dunnart were intersected with geology, regolith, soils, landform, vegetation and fire history spatial datasets (see metadata in Table 1) and the geophysical attributes for each of the locations were determined. The aim of this analysis was to determine if sandhill dunnart observations could be related to gradients in environmental attributes.

Table 1 Summary of geodata used to classify sandhill dunnart locations in Western Australia.

Layer (group)	Metadata
Fire scars	Mapped by Landgate from satellite images. NOAA burnt area maps
Geology of WA (Geology)	Detailed geological mapping at 1:250,000 providing information on geological units, structural geology and fault lines, to produce geological plans.
Landscape Character Types (Landform)	Landscape character type is a broad-scale area of land and water with common distinguishing visual characteristics based on physical landscapes and its overall visual appearance.
Physiognomic vegetation (Vegetation)	This dataset groups Beard's vegetation associations in the pre-European vegetation spatial dataset into vegetation types. Each vegetation type has a unique structural and floristic description, and can be further grouped into vegetation formations. Full details about the classification and descriptions of the Vegetation Types are presented in Beard, J. S., Beeston, G. R., Harvey, J. M. Hopkins, A. J. M. and Shepherd D.P. (2013) The vegetation of Western Australia at the 1:3,000,000 scale Explanatory memoir Second Edition In:

	Conservation Science Western Australia-Vol. 9.
Regolith (Geology)	The digital 1:500,000 regolith map of Western Australia (preliminary edition) is based on published GSWA 1:250,000 and 1:100,000 series geological maps. These maps have been simplified for display at 1:500,000 scale to include nine geological units (exposed (areas of outcrop), colluvium, alluvium, lacustrine, coastal, tidal, calcrete, sand plain and residual) as well as areas of mining activity.
Soils of WA (Geology)	Atlas of Australian Soils for Western Australia. Published by CSIRO, Melbourne, 1967. Published scale 1:2,000,000.

SANDHILL DUNNART SURVEY DESIGN

Aim

The aim of the baseline survey design was to identify planning units where:

- historical survey effort had been relatively low;
- cover of potential sandhill dunnart habitat (based on broad vegetation associations) was relatively high;
- there was no documented evidence of broad-scale fire in the past ten years;
- mining activity was relatively low; and
- roads would facilitate vehicular access.

Study area

The Shield and Central biogeographical sub-regions (IBRA 7) of the Great Victoria Desert were identified as the planning area and the QMarxan plugin for QGIS 2.8 was used to create 1,221 hexagons representing 1,250 ha planning units inside the planning area (Figure 1). Each planning unit was individually numbered.

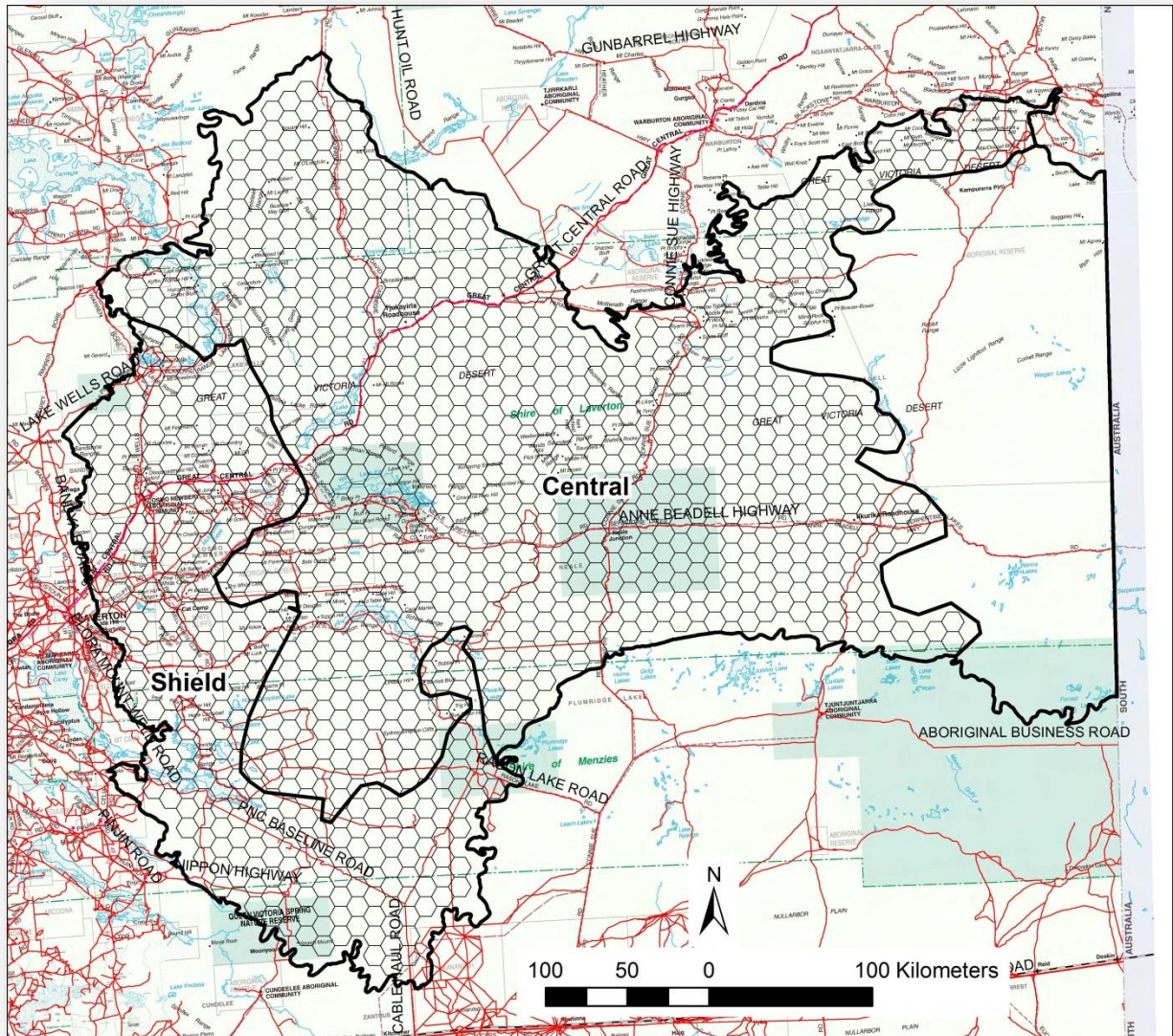


Figure 1 Great Victoria Desert IBRA Region showing the Shield and Central sub-regions representing the planning area, containing the 1,221 planning units (1,250 ha hexagons).

Datum and projection

All spatial data were projected in Australian Albers projection (Geocentric Datum of Australia 1994) which minimises distortion for geographic areas between latitudes and is thus, an ideal projection for area-weighted comparisons and modelling (Kennedy and Kopp 2000; Yildirim and Kaya 2008) such as those in the present study.

Previous survey effort

As a measure of previous survey effort for each planning unit, the locations for the 240 historical survey sites (see Department of Parks and Wildlife 2016) in the planning area were added to the map. The 'count points in polygon' tool in QGIS 2.8 was used to calculate the total number of sites that had been surveyed in each planning unit and these data are shown for each unit number as 'Sites surveyed' in Appendix 1.

Habitat

The physiognomic vegetation of Western Australia layer was considered the most appropriate means of representing habitat type in relation to other factors like geology, soils, landform etc. (see Beard *et al.* 2013). The Zonal Statistics tool of ArcMap 10.1 was used to calculate the area, in hectares, of each habitat type falling in each planning unit. The structural and floristic description of each habitat type is shown for the planning units in Table 2 and the area of habitat in each planning unit is shown in Appendix 1.

Table 2 Cover, structural and floristic description of habitats occurring in the planning area.

Habitat type	Structural description	Floristic description
Bare areas	Salt lake, lagoon, claypan, rock	
Halophyll and sarcophyll communities	Saltbush and bluebush	<i>Atriplex</i> sp., <i>Maireana</i> sp. communities on alkaline soils
	Saltbush and bluebush with scrub or open scrub	<i>Atriplex</i> sp., <i>Maireana</i> sp. with mulga (<i>Acacia aneura</i>), other wattle (<i>Acacia</i> sp.)
	Saltbush and/or bluebush with scattered low trees	<i>Atriplex</i> sp., <i>Maireana</i> sp. with mulga (<i>Acacia aneura</i>), other wattle (<i>A. papyrocarpa</i>), casuarina (<i>Allocasuarina cristata</i>)
	Samphire	<i>Tecticornia</i> sp. communities in saline areas
Low woodland (< 10m tall)	Low woodland or open low woodland	Other wattle (<i>Acacia</i> sp.), banksia (<i>Banksia</i> sp.), peppermint (<i>Agonis flexuosa</i>), cypress pine (<i>Callitris</i> sp.), casuarina (<i>Allocasuarina</i> sp.), York gum (<i>Eucalyptus loxophleba</i>)
	Low woodland, open low woodland or sparse woodland	Mulga (<i>Acacia aneura</i>) and associated species

Habitat type	Structural description	Floristic description
Medium woodland (10-30m tall)	Woodland	Goldfields-gimlet (<i>E. salubris</i>), redwood (<i>E. transcontinentalis</i>), etc. Riverine-rivergum (<i>E. camaldulensis</i>).
Spinifex grassland	Low tree-steppe	Hummock grassland (<i>Triodia</i> sp.) with scattered bloodwood (<i>Corymbia dichromophloia</i>) and snappy gum (<i>Eucalyptus brevifolia</i>)
	Shrub-steppe	Hummock grassland (<i>Triodia</i> sp.) with scattered shrubs (<i>Acacia</i> sp., <i>Grevillea</i> sp.) or mallee (<i>Eucalyptus</i> sp.)
	Sparse low tree-steppe	Hummock grassland (<i>Triodia</i> sp.) with sparse eucalypts e.g. bloodwood (<i>Corymbia dichromophloia</i>) and snappy gum (<i>Eucalyptus brevifolia</i>)
	Sparse shrub-steppe	Hummock grassland (<i>Triodia</i> sp.) with sparse shrubs (<i>Acacia</i> sp.)
	Tree- and shrub-steppe	Hummock grassland (<i>Triodia</i> sp.) with scattered eucalypts (<i>Eucalyptus gongylocarpa</i>) over wattle scrub (<i>Acacia</i> sp.) or mallee (<i>E. youngiana</i>)
Tall (sclerophyll) shrubland (> 1m tall)	Mallee	Eucalypt shrubland (<i>Eucalyptus eremophila</i> , <i>E. redunca</i> , <i>Eucalyptus</i> sp.)
	Scrub, open scrub or sparse scrub	Wattle (<i>Acacia</i> sp.), tea tree (<i>Melaleuca</i> sp.) and other species

Multi-criteria model

Multi-criteria modelling was used to identify planning units that were poorly surveyed, but which contained a relatively high proportion of the habitat type in which sandhill dunnarts had previously been recorded. This modelling technique uses matrix overlay calculations to select planning units according to set criteria. There are many approaches to multi-criteria modelling (Chakhar and Mousseau 2008; Drobne and Lisec 2009; Malczewski *et al.* 2010), and the technique is commonly used to assist in conservation management decision making (Diaz-Balteiro and Romero 2008; Mendoza and Martins 2006).

Each layer must have the same data format and thus, the data associated with each planning unit must be standardised via re-scaling; for example on a scale from 0-100 or 0-1, depending on the method chosen. A simplified example of this process is shown in Figure 2, where the large squares represent

the planning area and the small squares represent the planning units. In this example, there are two layers of spatial data, one with decimal data (between 0 and 0.5) and one with whole numbers (between 0 and 50), which are re-scaled into equitable classes from 1 to 5. The layers are then overlaid and matrix based algorithms are used to calculate a value for each planning unit according to pre-determined criteria (Drobne and Lisec 2009; Malczewski *et al.* 2010). Criteria may be included as 'benefit criteria', which are selected for, or as 'cost criteria', which are selected against, by reversing their scaled values.

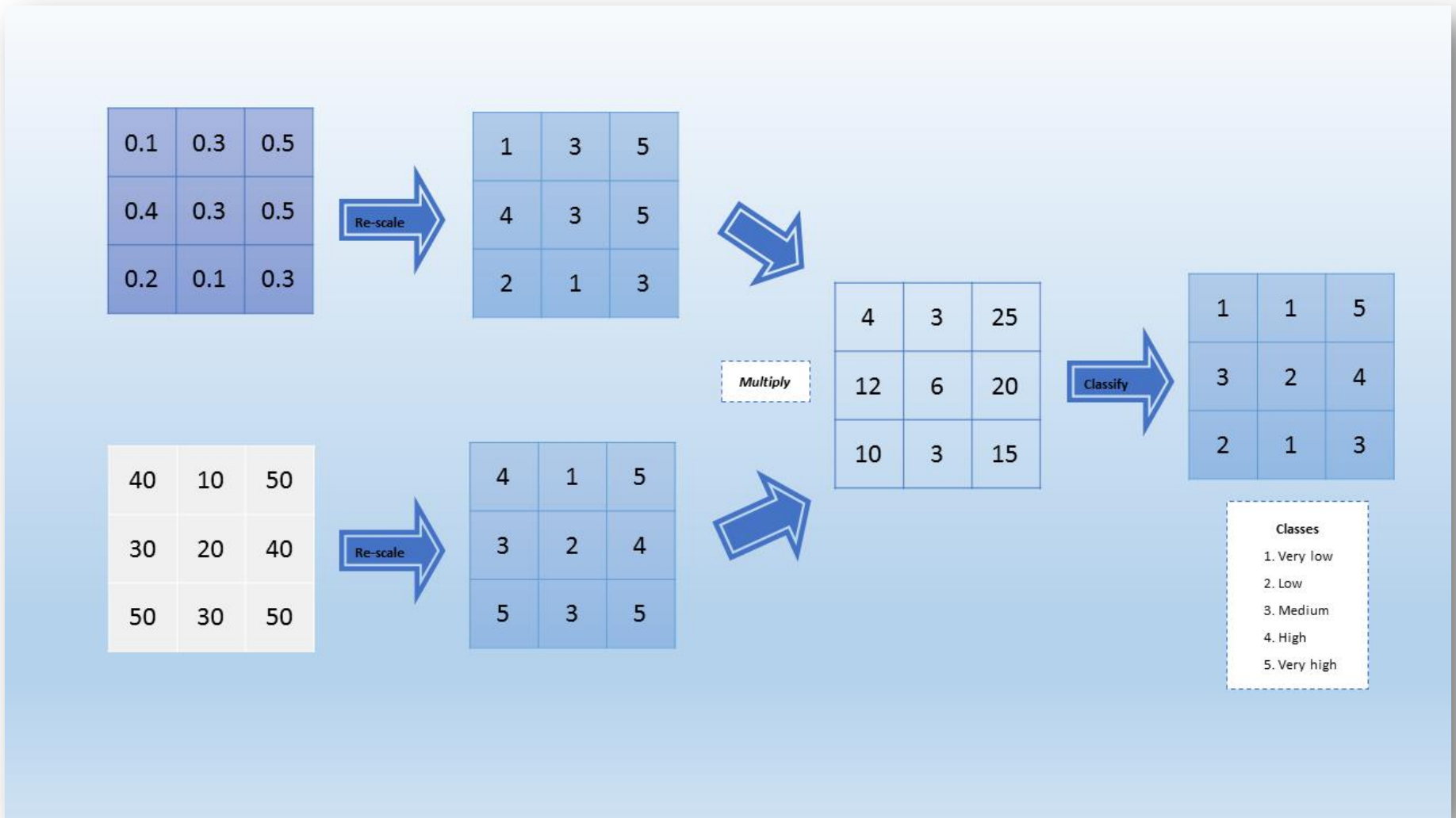


Figure 2 Simplified schematic diagram of the matrix overlay calculation process used to combine spatial data layers into a multi-criteria model.

Benefit factors

The benefit factors selected for the model were low woodland, tall shrubland and spinifex grassland (Figure 3). As sandhill dunnarts have been found in habitats with combinations of mallee, shrubland and mid-age spinifex habitats with 30-70% cover in Western Australia (Churchill 2001b; Gaikhorst and Lambert 2014), it was assumed that these vegetation associations represented potentially suitable habitat.

Cost factors

In order to increase the geographic coverage of survey effort across the broader GVD, previous survey effort was considered a cost factor in the model (Figure 3). As medium woodland was considered unsuitable habitat (J. Turpin pers. comm.) and only occurred in two planning units, it was also included as a cost factor. Other unsuitable habitats such as saltbush, bluebush and samphire, and lakes, lagoons, claypans, and areas of rocky outcrops were combined into a single layer called 'Unsuitable habitat' and also modelled as a cost factor (Figure 3).

Model construction

The open source multi-criteria decision analysis and geo-visualisation tool MCDA4ArcMap (Rinner and Voss 2013) was used to construct the model (see Voss 2015). Each layer was given equal weight (16.67%; Figure 3).

Algorithms

The data layers were standardized using maximum score normalisation (x'_i); Equation 1 for benefit factors and Equation 2 for cost factors:

$$x'_i = \frac{x_i}{x_{max}} \quad \text{Equation 1}$$

$$x'_i = 1 - \frac{x_i}{x_{max}} \quad \text{Equation 2}$$

Weighted linear combination (WLC) was then used to combine the data layers, using Equation 3:

$$WLC = \sum_{k=1}^n v(x'_i)w_k \quad \text{Equation 3}$$

where v is the criterion value and $0 \leq w \leq 1$ is the weight.

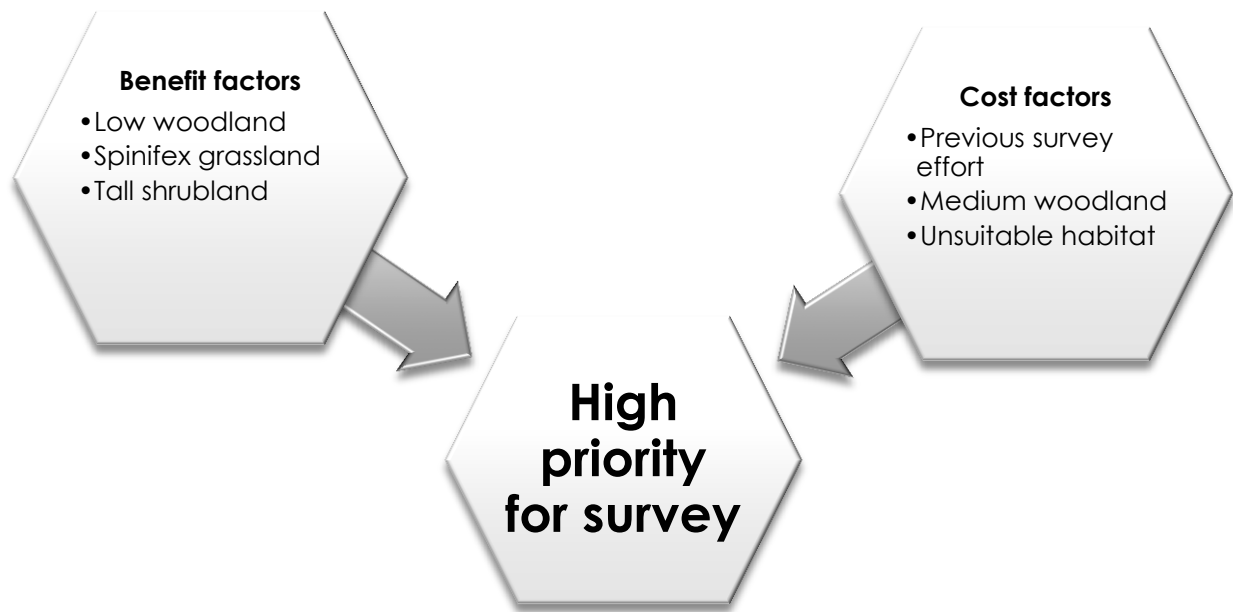


Figure 3 Conceptual diagram of the multi-criteria model used to select planning units for sandhill dunnart surveys.

The resulting values were divided into five classes of priority for sandhill dunnart surveys, using natural breaks (jenks). The planning units in the top three priority classes for survey were extracted for further analysis because they are most likely to represent areas where sandhill dunnarts may occur.

Removal of units in close proximity to mining infrastructure

Data layers showing mining leases (excluding proposed and undeveloped areas), and mining infrastructure (such as open pits, processing plants, tailings storage etc.) were overlain on the planning area. Spatial tools were used to select planning units which had their centroid within a live mining tenement and / or where mining infrastructure was present in the planning unit. These units were excluded from those suitable for survey due to potential access and health and safety issues.

Removal of recently burnt units

Fire scars layers, prepared by Landgate from satellite images, were also overlain on the planning area and a select query in ArcMap 10.1 was used to extract fire scars between 2006 and 2015. A spatial query was then used to

select planning units which had not been burnt in the last ten years. Recently burnt planning units (≤ 10 years post fire) were excluded as they are unlikely to support sufficient vegetation cover for sandhill dunnarts (Churchill 2001a, b; Gaikhorst and Lambert 2014). It is important to note that the coarse resolution of the fire scar layer means that patchy burns are unlikely to be well represented.

Identification of units with road access

To facilitate vehicular site access, planning units that were intercepted by roads were selected via spatial analysis in ArcMap 10.1.

Stratified random sampling by habitat type

The limitations of using the physiognomic vegetation layer to represent habitat for this kind of modelling exercise are two-fold. First, the coarse resolution of this layer (1:3,000,000) means that it is a broad representation of habitat type. Second, because the planning units were 1,250 hectares in area, more than one vegetation type may occur in each planning unit. To account for this, planning units were classified to represent the dominant vegetation type occurring within each unit (i.e. at least 50% cover).

Stratified random sampling was used to select planning units for survey in each of the three dominant habitat types: low woodland, spinifex grassland; and tall shrubland. The number of planning units representing each dominant habitat type was calculated and 20 survey units were randomly selected according to the relative proportion of each habitat type, with a minimum of two units allocated to each habitat type using the vector research tools in QGIS 2.8.

Field guide

The planning units identified in the baseline survey design were converted into an atlas so they could be readily located in the field.

Results

HISTORICAL RECORDS

Fauna surveys sites that either targeted sandhill dunnarts or could have detected sandhill dunnarts (see Department of Parks and Wildlife (2016) for more detail on surveys) are shown in Figure 4. There was a clear spatial bias toward the south-western part of the Great Victoria Desert Bioregion. There are two reasons for this. First, since the sandhill dunnart is a little known threatened species, targeted surveys were concentrated in areas where the species had previously been detected. Second, the south western part of the study area has been a region of high activity for mining exploration and resource extraction (refer to Figure 9) resulting in a concentration of fauna impact assessments in that area. Sandhill dunnarts were detected in 15 locations in a 4,674 km² area within, and to the north-east, of Queen Victoria Spring Nature Reserve (Figure 5).

GEOPHYSICAL FEATURES

The 15 locations where sandhill dunnarts were detected all fell in the Great Victoria Desert dunefields landform and shared similar geology and soils: Cainozoic Quaternary Aeolian red and yellow quartz sand. Figure 6 shows that locations 1-3 were in mulga (*Acacia aneura*) low woodland, open low woodland or sparse woodland, and locations 4-15 were in hummock grassland (*Triodia* sp.) with scattered eucalypts (*Eucalyptus gongylocarpa*) over wattle scrub (*Acacia* sp.), or mallee (*E. youngiana*). Note that these habitat descriptions are derived from the physiognomic vegetation layer, and so are broad representations that may differ from what is actually present.

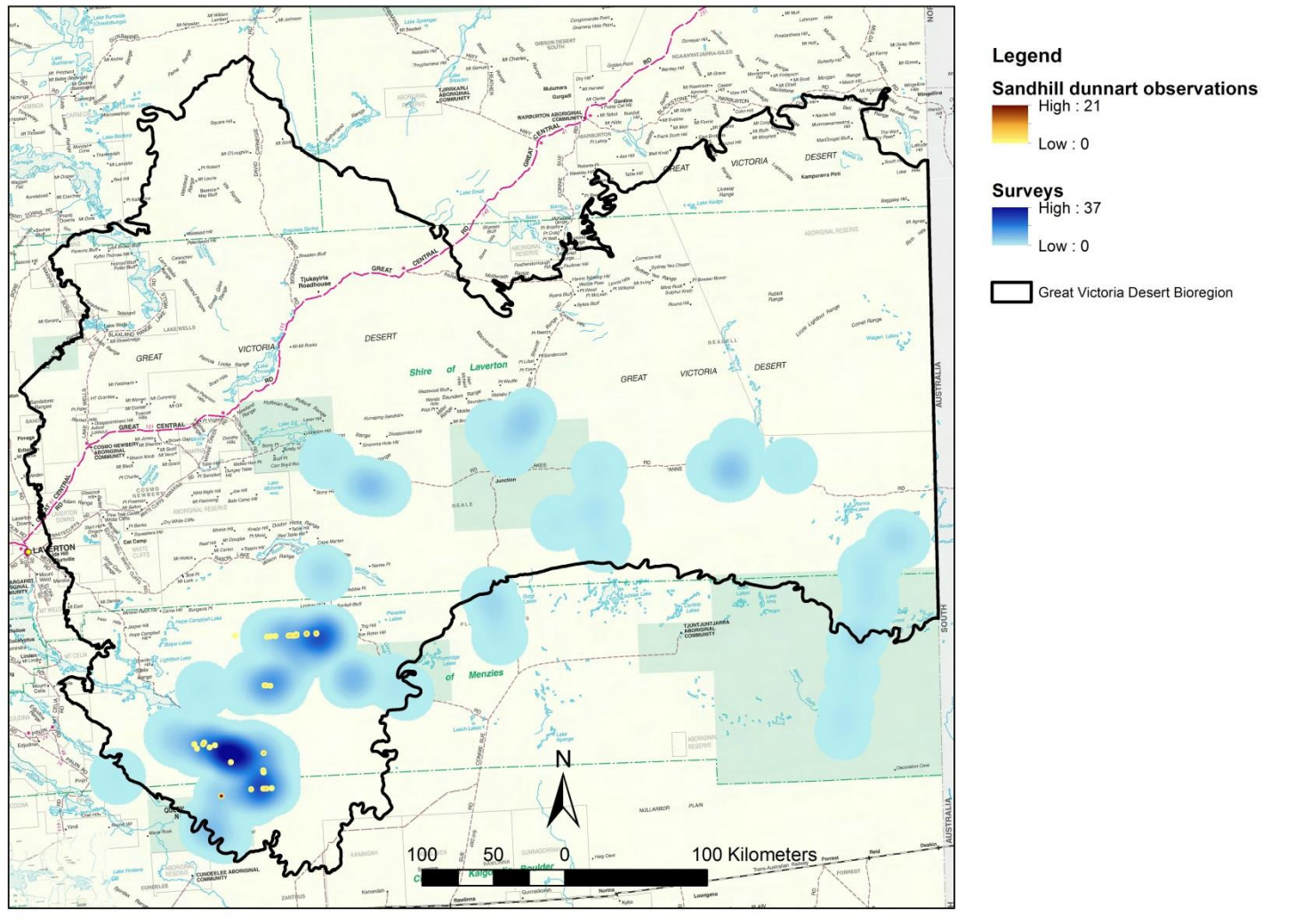


Figure 4 Heatmaps showing survey effort ($n = 240$ sites surveyed) and sandhill dunnart observations ($n = 84$). Note that two sandhill dunnarts were captured in a construction trench and thus were not associated with survey sites (see Department of Parks and Wildlife (2016) for more detail).

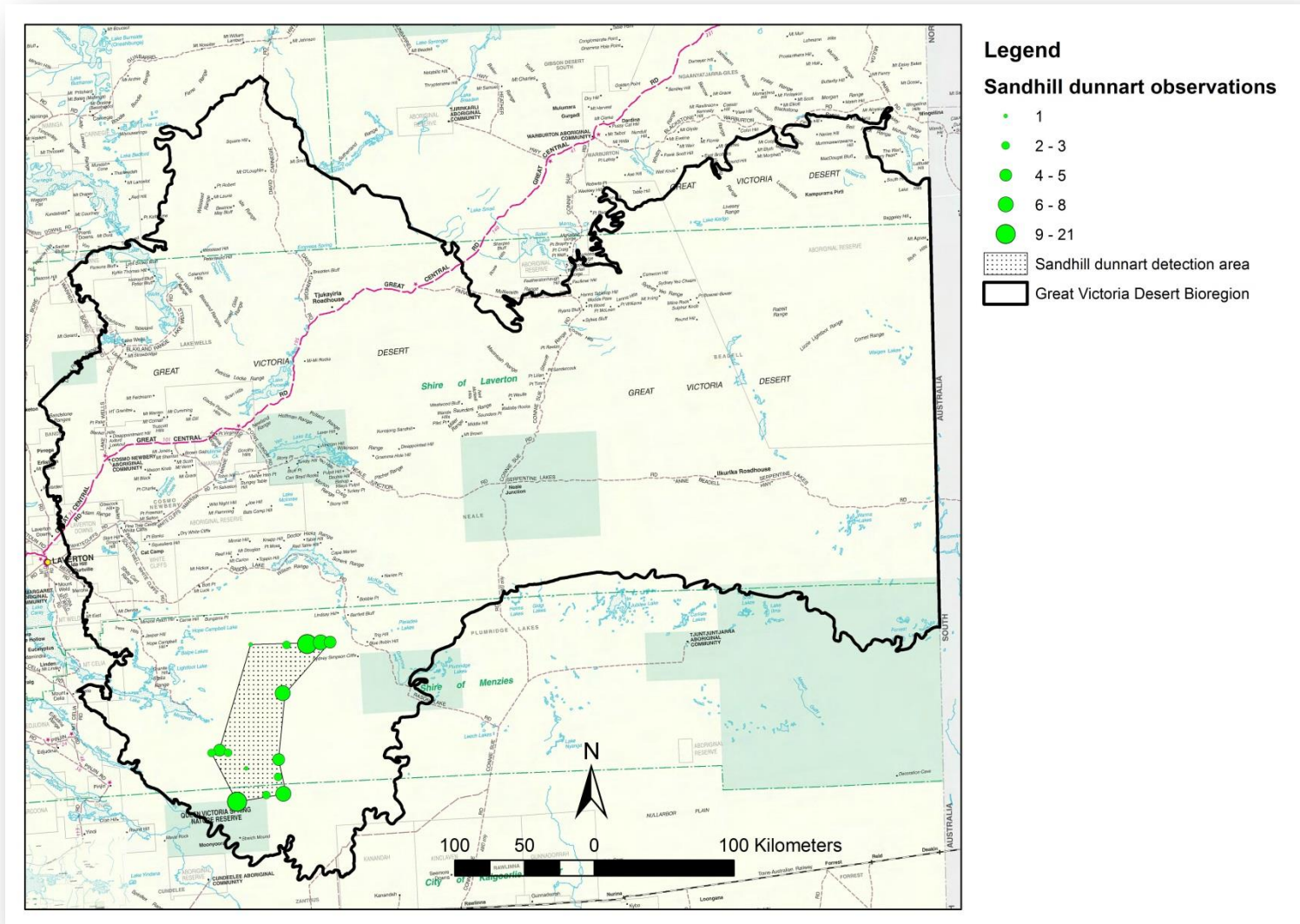


Figure 5 Locations where sandhill dunnarts were detected ($n=15$ locations ≥ 2 km apart) with graduated circles representing the number of dunnart detections for each location, with concave hull polygon.

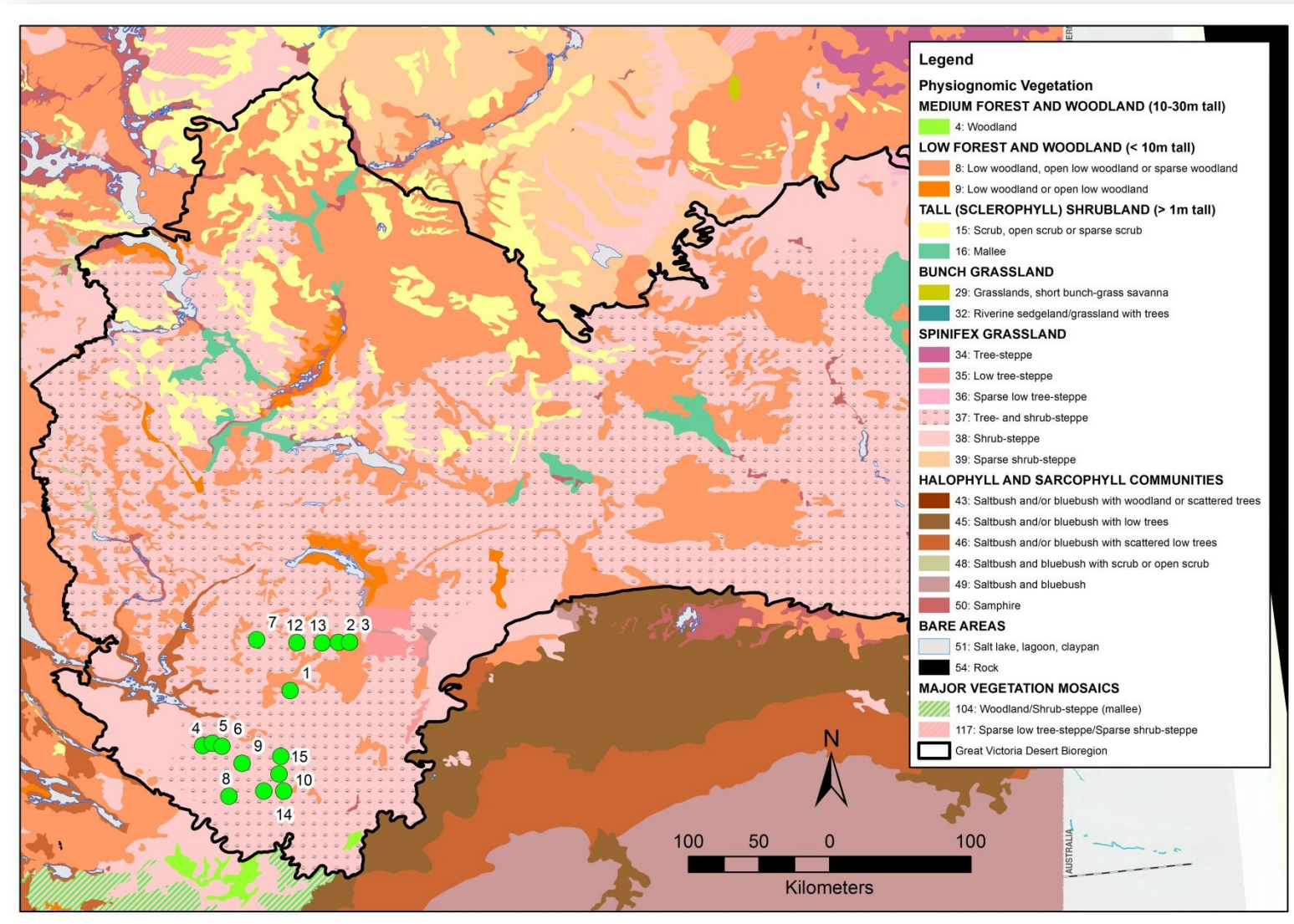


Figure 6 Locations where sandhill dunnarts were detected shown with physiognomic vegetation.

Survey Plan

The data included in the model are shown spatially in Figure 7 and presented in tabulated format in Appendix 1. The six corresponding layers, representing the scaled and classified data are shown under benefit and cost factors in Figure 8. The result of the linear combination model, allocating priority to units are shown in the centre of Figure 8. Units that were a high priority for survey (categories 1-3) were exported for further analysis.

The high priority units for survey (hexagons in categories 1-3) are shown with live mining tenements and mining infrastructure in Figure 9 and with fire scars for the last ten years in Figure 10. After removal of units that were affected by mining activity and / or fire, 457 units remained and these are shown by dominant habitat type in Figure 11. The 20 randomly selected units, stratified by habitat type, are shown with the corresponding unit number in Figure 12.

ROAD ACCESS

Figure 13 shows the 143 high priority planning units (hexagons in categories 1-3) that were intercepted by roads. Figure 14 shows the 20 randomly selected units with road assess stratified by dominant habitat type.

LOCATION AND DOMINANT HABITAT TYPE OF SURVEY UNITS

The numbered survey units can be located in the field by using the atlas and the cover for each habitat type is shown by planning unit number in Appendix 1.

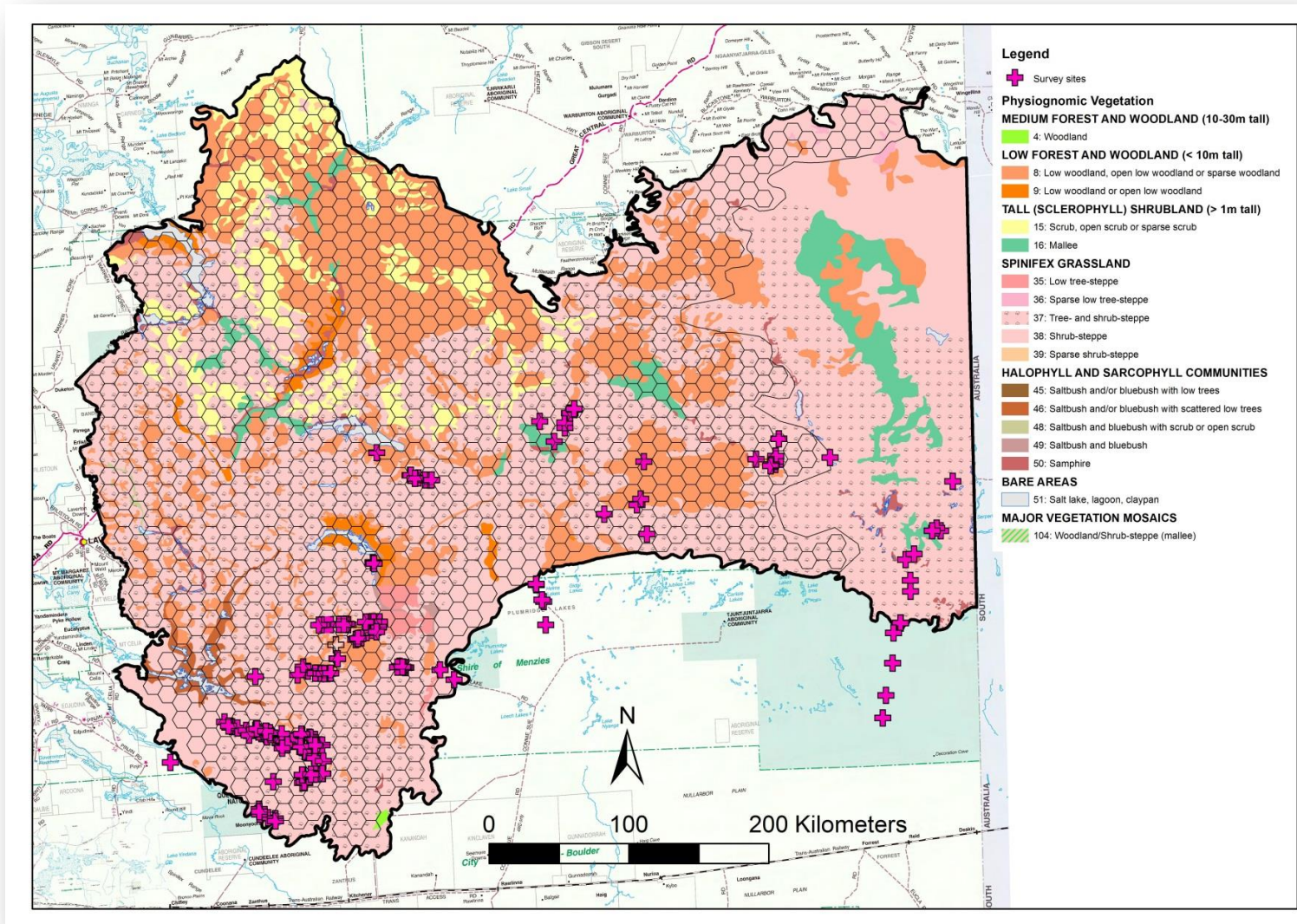


Figure 7 Planning area showing planning units (hexagons), known historical survey sites ($n = 240$ in total and $n = 209$ falling in the planning units) and physiognomic vegetation.

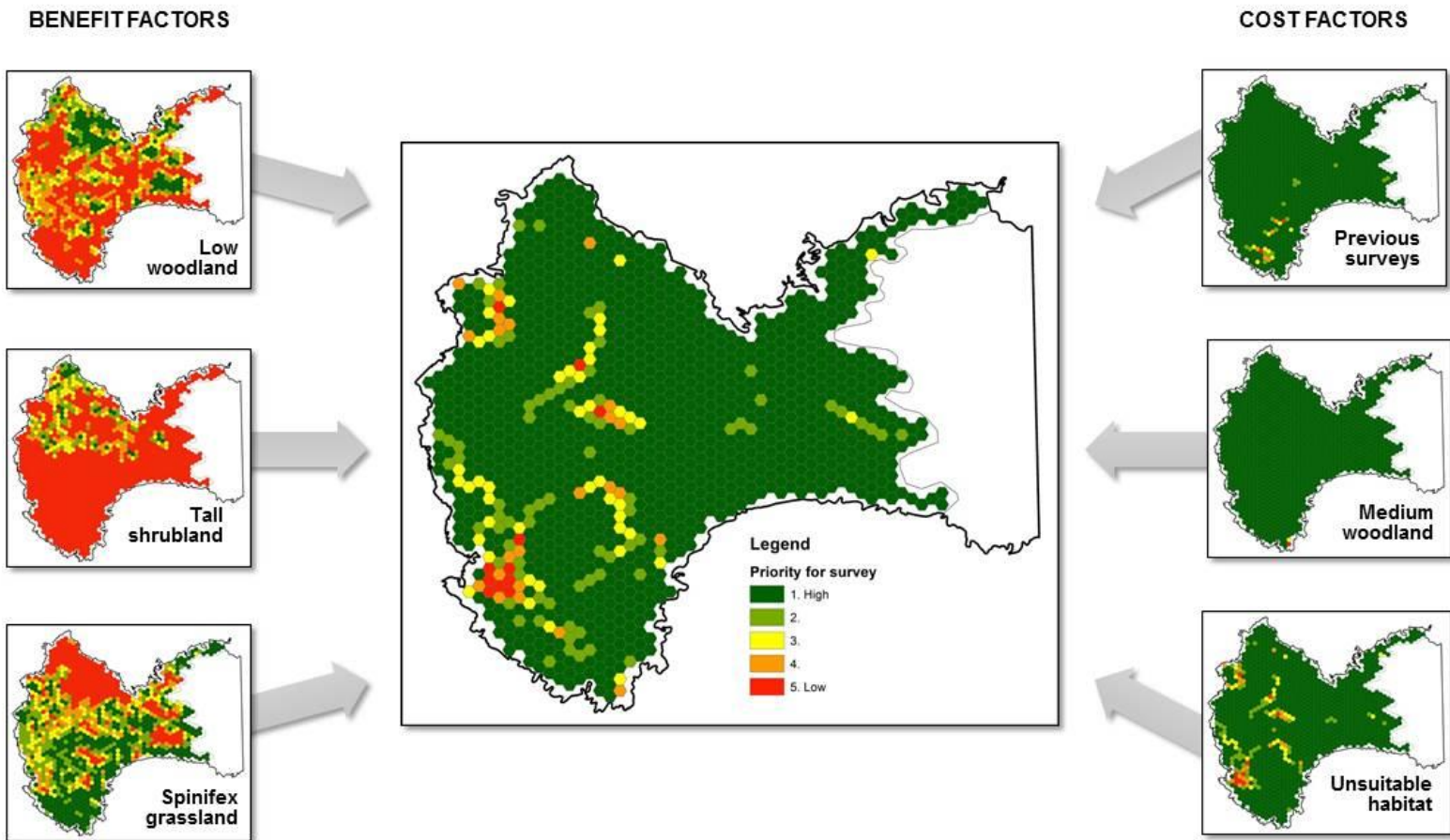


Figure 8 Multi-criteria model showing priority for additional survey based on relatively high cover of low woodland, tall shrubland and spinifex grassland and relatively low historical survey effort, cover of medium woodland and cover of unsuitable habitat. The six factors were evenly weighted (16.67%) and $n = 1,221$ planning units.

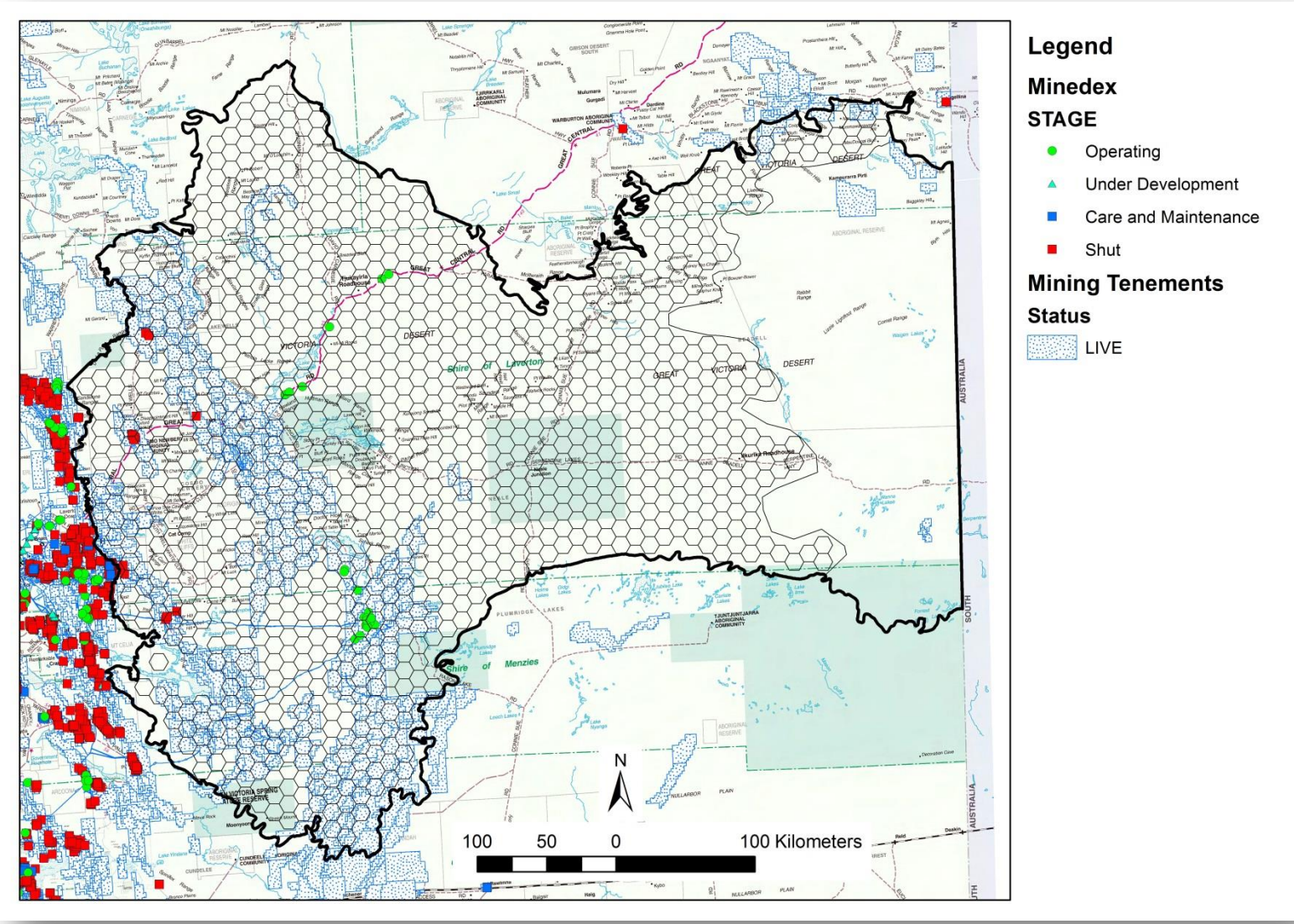


Figure 9 High priority planning units for survey (n = 1,185), shown with mining infrastructure and tenements.

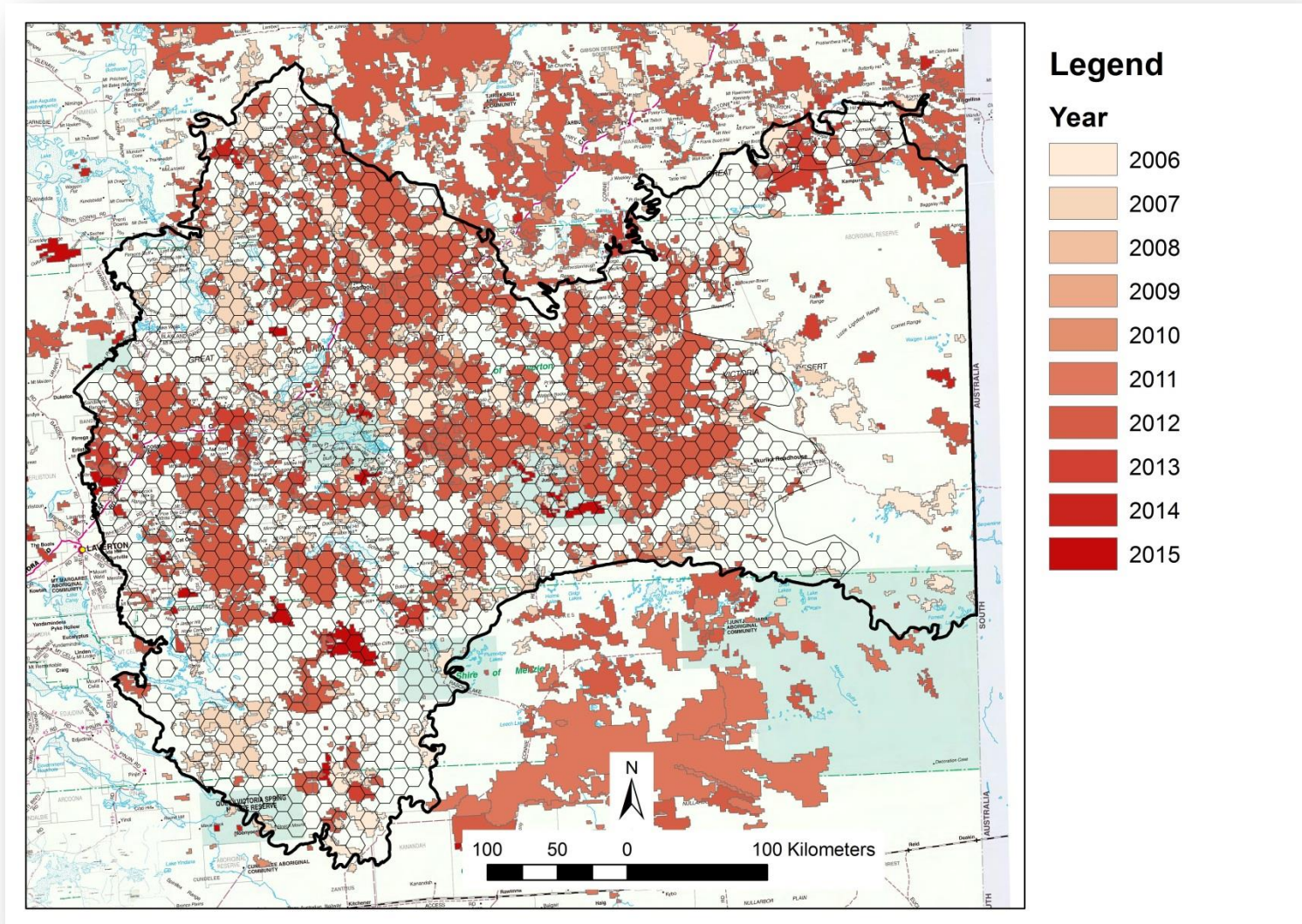


Figure 10 High priority planning units for survey ($n = 1,185$), showing fire scars between 2006 and 2015.

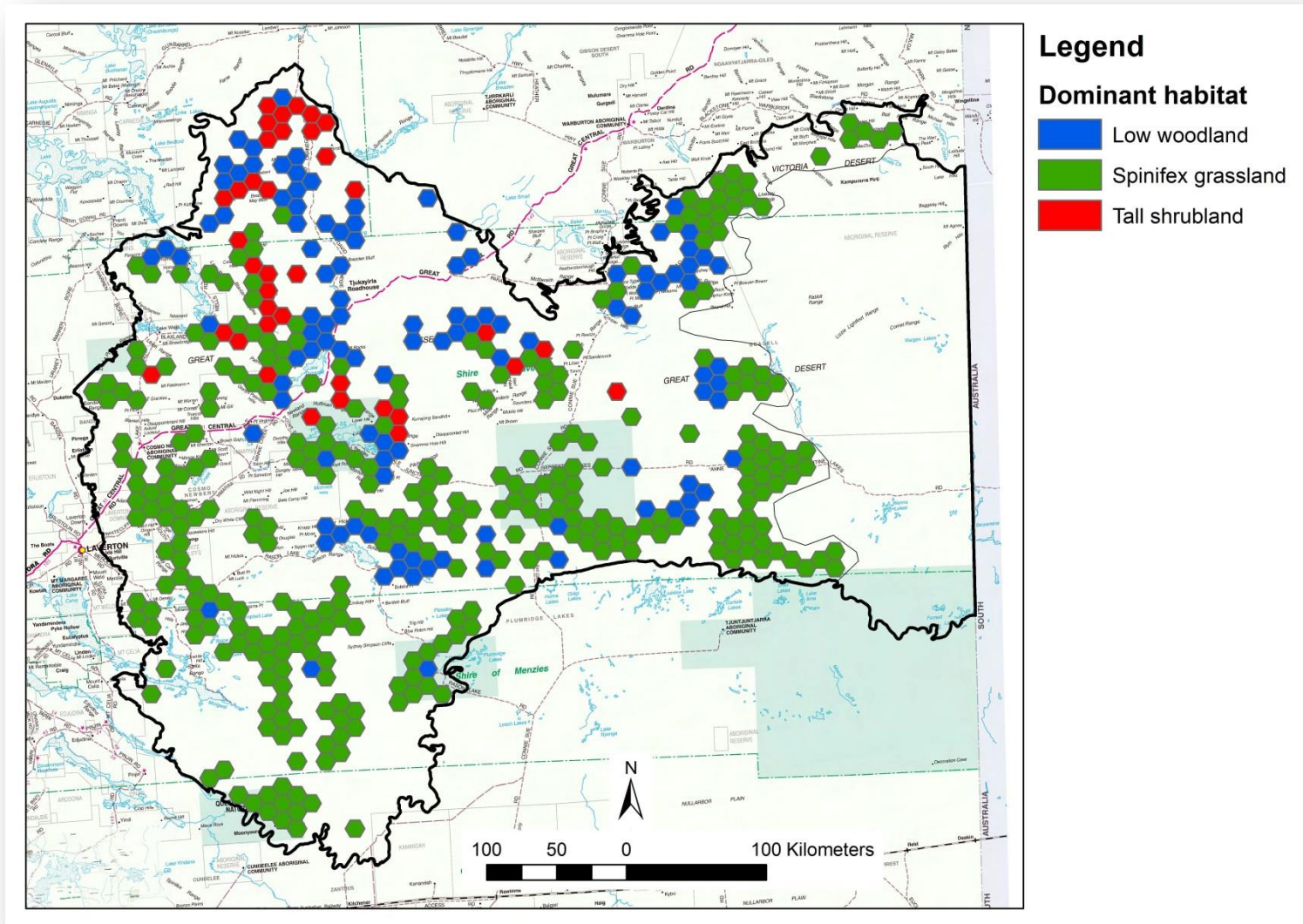


Figure 11 Planning units remaining after removal of those affected by mining and fire in the last 10 years ($n = 457$), shown with dominant habitat type.

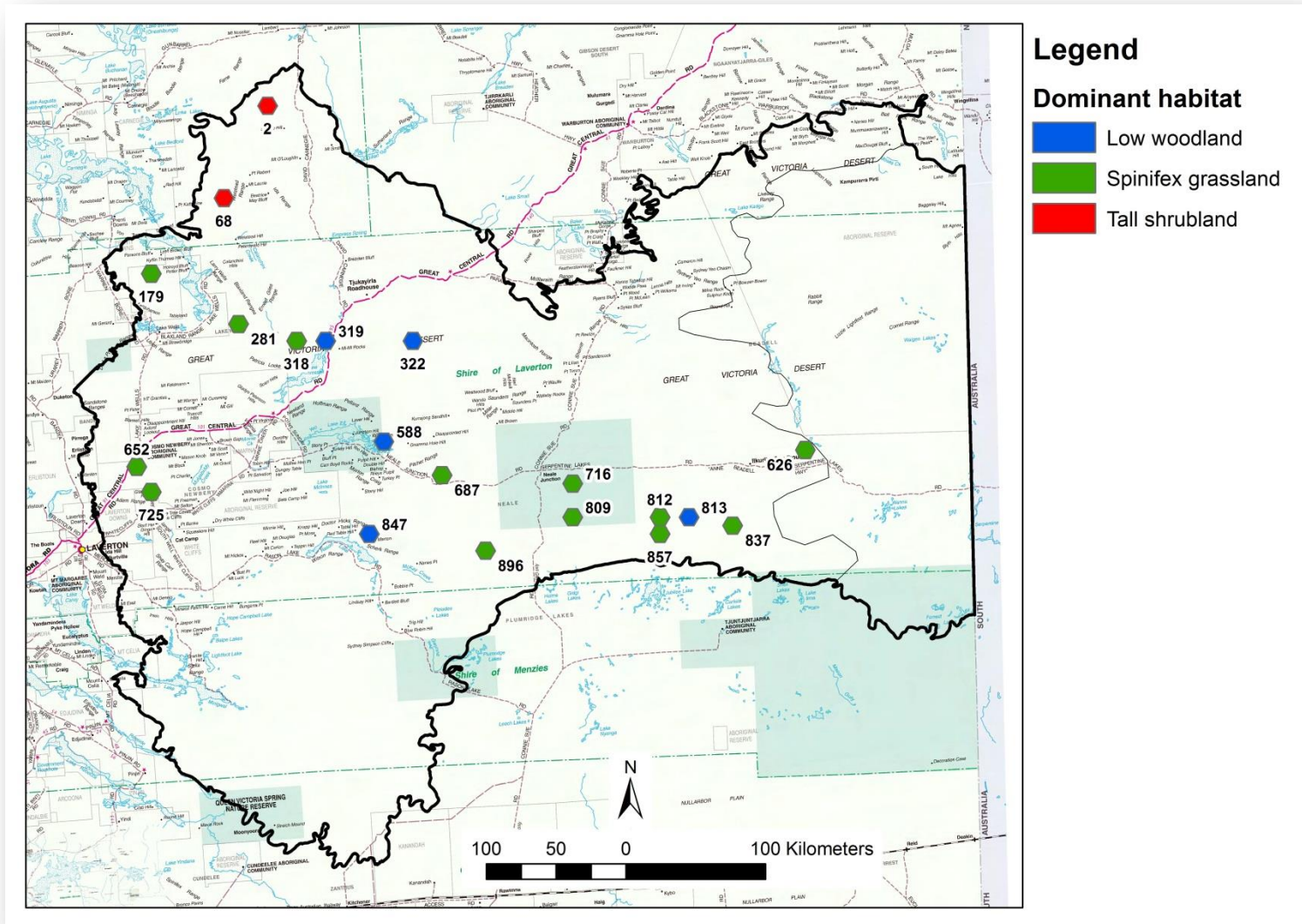


Figure 12 Twenty randomly selected planning units shown with dominant habitat type and labelled with unit number.

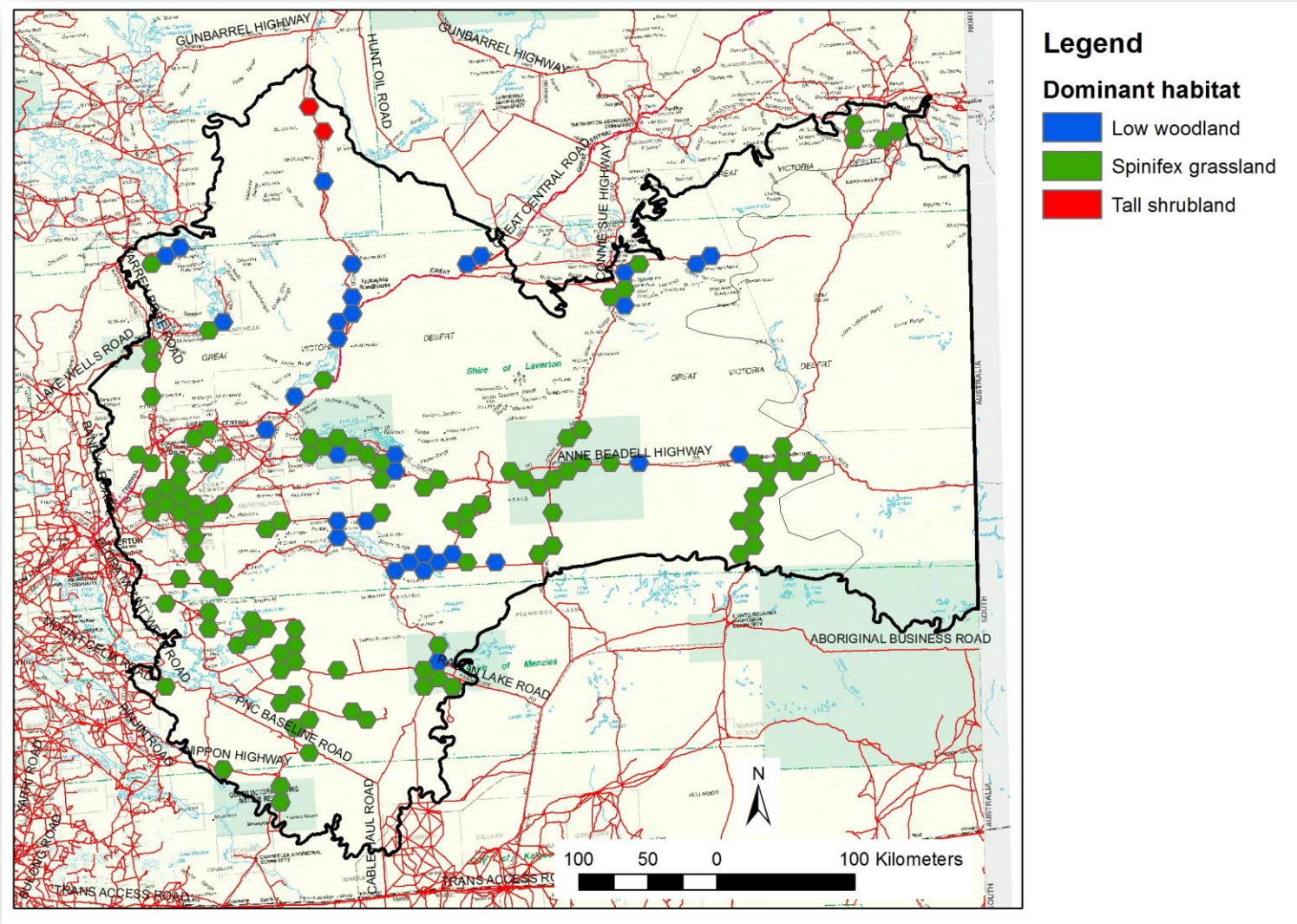


Figure 13 Planning units remaining after removal of those affected by mining and fire in the last 10 years that were intercepted by roads (n = 143), shown with dominant habitat type.

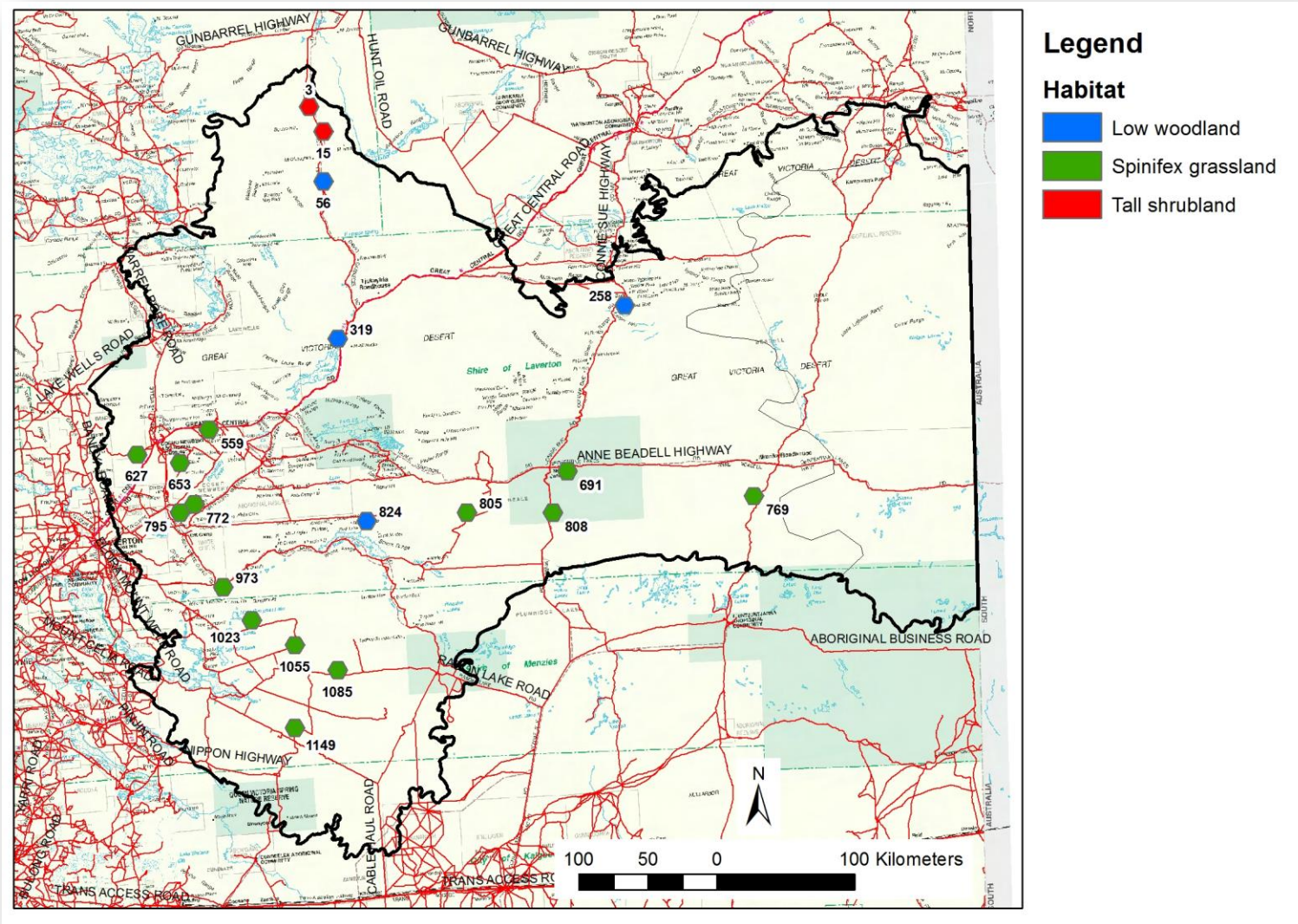


Figure 14 Twenty randomly selected planning units selected from those with road access, labelled with unit number.

Recommendations for the placement of survey sites

The review of previous survey effort for the sandhill dunnart in this report indicates that only a small area of the species' potential range has been sampled in Western Australia. Locations where the sandhill dunnart has been previously detected are very similar in geology, regolith, soils, landform and vegetation type. This may be because sandhill dunnarts occur in a narrow range of habitats, or because surveys to date have been biased toward locations where the sandhill dunnart has previously been detected. In addition, because there are very few sites where the sandhill dunnart has been detected, and detection rates have been low, there are insufficient data to make quantitative inferences regarding the likelihood of detecting the species in relation to a suite of environmental parameters.

A quantitative survey design is presented in this analysis which aims to identify survey units with relatively low previous survey effort and relatively high proportion of 'suitable' habitats where the dunnart may occur (i.e. low woodland, spinifex grassland and tall shrubland). Additional criteria were applied to avoid units affected by mining activity, and fire in the last decade and to facilitate vehicular access if this is deemed necessary.

While 20 planning units were randomly selected for the initial survey program, any number of the survey units identified as a part of this process could be selected for survey. A stratified random sampling approach is recommended, but the ultimate aim may be to sample all of the units shown in Figure 11, depending on the results of the phased survey as they emerge.

The scale of the vegetation maps and the inherent inaccuracies associated with spatial data mean that they should only be considered as broad representations of habitat types present on the ground. Further interrogation, such as examination of Google Earth maps, and ground truthing, is essential to inform actual placement of survey sites.

Given the above caveat, the following guidelines are recommended for the baseline survey program:

- Surveys should be conducted as described in the *Survey and monitoring guidelines for the sandhill dunnart in Western Australia* (Department of Parks and Wildlife 2016).
- Initially, seven camera traps should be placed, at least 2 km apart, in each planning unit (hexagon). It is expected that precise placement will be finalised in the field.
- Where possible, camera traps should be placed in the habitat types present according to the proportion of each habitat type represented in the survey unit. These data are provided in Appendix 1.
- Camera trapping and documentation should be conducted in accordance with the survey and monitoring guidelines (Department of Parks and Wildlife 2016). However, for the purpose of the baseline survey, it is recommended that the cameras are set to operate for 60 days. This may be refined to a shorter period once the data are reviewed.
- The following data sheets should be filled out for each camera trap location:
 - Local site information
 - Recent fire and disturbance
 - Vegetation structure
 - Camera trapping
- If sandhill dunnarts (or suspected sandhill dunnarts) are detected by camera traps, then pitfall traps should be installed at that location as recommended by the survey and monitoring guidelines (Department of Parks and Wildlife 2016).

A comprehensive survey program will require a phased process. It is anticipated that with the completion of each survey phase, the survey design will be refined.

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Appendix 1

Planning units (1,250 hectare hexagons) showing historical survey effort, habitat cover and dominant habitat type. Unsuitable habitat = lake, lagoon, claypan, rock, saltbush, bluebush and samphire.

Unit No	Sites surveyed	Habitat cover (Hectares)				Dominant habitat	
		Unsuitable	Low woodland	Medium woodland	Spinifex grassland		Tall shrubland
1			673			577	Low woodland
2		11	263			976	Tall shrubland
3			125		213	912	Tall shrubland
4			1,136			114	Low woodland
5			457			793	Tall shrubland
6					457	793	Tall shrubland
7					1,250		Spinifex grassland
8			617			633	Tall shrubland
9					147	1,103	Tall shrubland
10			134		69	1,047	Tall shrubland
11					1,250		Spinifex grassland
12					1,250		Spinifex grassland
13			1,193			57	Low woodland
14			17			1,233	Tall shrubland
15			279			971	Tall shrubland
16					1,250		Spinifex grassland
17					1,250		Spinifex grassland
18			809			441	Low woodland
19			295			955	Tall shrubland
20			201			1,049	Tall shrubland
21			588			662	Tall shrubland
22					1,250		Spinifex grassland
23					1,250		Spinifex grassland
24					1,250		Spinifex grassland
25			880			370	Low woodland
26			890			360	Low woodland
27			63			1,187	Tall shrubland
28			925			325	Low woodland
29			13		1,237		Spinifex grassland
30			247		1,003		Spinifex grassland
31					1,250		Spinifex grassland
32					1,250		Spinifex grassland
33		45	1,205				Low woodland
34			1,248			2	Low woodland
35			642			608	Low woodland
36			605			645	Tall shrubland

Unit No	Sites surveyed	Habitat cover (Hectares)				Dominant habitat
		Unsuitable	Low woodland	Medium woodland	Spinifex grassland	
37			423		827	Spinifex grassland
38					1,250	Spinifex grassland
39					1,250	Spinifex grassland
40		166	806			277 Low woodland
41		186	734			330 Low woodland
42			848			402 Low woodland
43			923			327 Low woodland
44			583			667 Tall shrubland
45					1,250	Spinifex grassland
46			751			499 Low woodland
47			1,030			220 Low woodland
48			657			593 Low woodland
49			886			364 Low woodland
50			611			639 Tall shrubland
51					1,250	Spinifex grassland
52					1,250	Spinifex grassland
53		36	993			221 Low woodland
54			24			1,226 Tall shrubland
55			882			368 Low woodland
56			916			334 Low woodland
57		38	789			423 Low woodland
58			916			334 Low woodland
59					1,250	Spinifex grassland
60					1,250	Spinifex grassland
61			269			981 Tall shrubland
62			424		91	735 Tall shrubland
63			1,152			98 Low woodland
64		511	638			101 Low woodland
65			589			661 Tall shrubland
66			759			491 Low woodland
67					1,250	Spinifex grassland
68			16			1,234 Tall shrubland
69			439		2	809 Tall shrubland
70			666		70	514 Low woodland
71		7	653			590 Low woodland
72		45	1,205			Low woodland
73			265			985 Tall shrubland
74			421			829 Tall shrubland
75			1,038			212 Low woodland
76			350		900	Spinifex grassland
77					1,250	Spinifex grassland
78					1,250	Spinifex grassland
79			1,165			85 Low woodland
80			722			528 Low woodland

Unit No	Sites surveyed	Habitat cover (Hectares)				Dominant habitat	
		Unsuitable	Low woodland	Medium woodland	Spinifex grassland		Tall shrubland
81					761	489	Spinifex grassland
82			736		26	489	Low woodland
83		33	1,217				Low woodland
84			1,134			116	Low woodland
85			1,205			45	Low woodland
86			848			402	Low woodland
87			795		455		Low woodland
88			306		944		Spinifex grassland
89		282			968		Spinifex grassland
90					1,250		Spinifex grassland
91			847			403	Low woodland
92			246		402	601	Tall shrubland
93					832	418	Spinifex grassland
94			789			461	Low woodland
95			1,250				Low woodland
96		278	236			737	Tall shrubland
97			937			313	Low woodland
98			940			310	Low woodland
99			601		649		Spinifex grassland
100		10			1,240		Spinifex grassland
101			1,121			129	Low woodland
102			820		4	426	Low woodland
103					793	457	Spinifex grassland
104			977		273		Low woodland
105			1,250				Low woodland
106			1,250				Low woodland
107			1,250				Low woodland
108			1,094			156	Low woodland
109			385		865		Spinifex grassland
110			572		678		Spinifex grassland
111			898			352	Low woodland
112					986	264	Spinifex grassland
113			199		1,051		Spinifex grassland
114			763			487	Low woodland
115			1,250				Low woodland
116			1,183			67	Low woodland
117			1,250				Low woodland
118			1,250				Low woodland
119			1,250				Low woodland
120			873		377		Low woodland
121			1,051		199		Low woodland
122					1,250		Spinifex grassland
123			876		219	155	Low woodland
124			366		438	446	Tall shrubland

Unit No	Sites surveyed	Habitat cover (Hectares)				Dominant habitat	
		Unsuitable	Low woodland	Medium woodland	Spinifex grassland		Tall shrubland
125			25		644	581	Spinifex grassland
126			1,021		178	51	Low woodland
127			1,201			49	Low woodland
128			1,250				Low woodland
129			1,250				Low woodland
130			1,250				Low woodland
131			1,250				Low woodland
132			1,176		74		Low woodland
133			362		888		Spinifex grassland
134		574	676				Low woodland
135		226	1,024				Low woodland
136		186	574		491		Low woodland
137			763		380	107	Low woodland
138			73		1,076	101	Spinifex grassland
139			24		861	365	Spinifex grassland
140			1,229			21	Low woodland
141			1,250				Low woodland
142			1,250				Low woodland
143			981			269	Low woodland
144			1,250				Low woodland
145			1,250				Low woodland
146			1,250				Low woodland
147			993		257		Low woodland
148			860		390		Low woodland
149		330	739		180		Low woodland
150			362		888		Spinifex grassland
151					929	321	Spinifex grassland
152			642			608	Low woodland
153			496			754	Tall shrubland
154			1,250				Low woodland
155			1,250				Low woodland
156			779			471	Low woodland
157			1,120			130	Low woodland
158			1,250				Low woodland
159			1,250				Low woodland
160			1,178		72		Low woodland
161			1,054		196		Low woodland
162			1,117		133		Low woodland
163			417		762	71	Spinifex grassland
164			396		854		Spinifex grassland
165		734	328		188		Unsuitable
166			64		1,145	41	Spinifex grassland
167					230	1,020	Tall shrubland
168			438		34	778	Tall shrubland

Unit No	Sites surveyed	Habitat cover (Hectares)				Dominant habitat	
		Unsuitable	Low woodland	Medium woodland	Spinifex grassland		Tall shrubland
169			1,068			182	Low woodland
170			1,183			67	Low woodland
171			1,250				Low woodland
172			437			813	Tall shrubland
173			1,250				Low woodland
174			1,250				Low woodland
175			1,250				Low woodland
176			34		1,216		Spinifex grassland
177			1,023		227		Low woodland
178			1,250				Low woodland
179					1,250		Spinifex grassland
180		123	297		829		Spinifex grassland
181		249	223		777		Spinifex grassland
182					778	472	Spinifex grassland
183					13	1,237	Tall shrubland
184			439			811	Tall shrubland
185			869			381	Low woodland
186			1,250				Low woodland
187			639			611	Low woodland
188			342			908	Tall shrubland
189			965			285	Low woodland
190			971			279	Low woodland
191			983		267		Low woodland
192			716		534		Low woodland
193			1,250				Low woodland
194			988		262		Low woodland
195					1,250		Spinifex grassland
196					1,250		Spinifex grassland
197		973			277		Unsuitable
198					1,199	51	Spinifex grassland
199					1,164	86	Spinifex grassland
200			886			364	Low woodland
201			524			726	Tall shrubland
202		80	1,012			158	Low woodland
203			1,250				Low woodland
204			174			1,076	Tall shrubland
205			1,042			208	Low woodland
206			281			969	Tall shrubland
207			676			574	Low woodland
208			762		488		Low woodland
209			1,250				Low woodland
210			936		314		Low woodland
211					1,250		Spinifex grassland
212		298			827	124	Spinifex grassland

Unit No	Sites surveyed	Habitat cover (Hectares)				Dominant habitat	
		Unsuitable	Low woodland	Medium woodland	Spinifex grassland		Tall shrubland
213		29			1,221	Spinifex grassland	
214					555	695	Tall shrubland
215					93	1,157	Tall shrubland
216			1,185			65	Low woodland
217		111	715			424	Low woodland
218			1,250				Low woodland
219			1,066			184	Low woodland
220			520			730	Tall shrubland
221			790			460	Low woodland
222			35			1,215	Tall shrubland
223			505		745		Spinifex grassland
224			1,184		66		Low woodland
225			601		649		Spinifex grassland
226			466		784		Spinifex grassland
227					1,250		Spinifex grassland
228		746			130	373	Unsuitable
229					1,243	7	Spinifex grassland
230					725	525	Spinifex grassland
231			927			323	Low woodland
232			1,192			58	Low woodland
233		442	712			96	Low woodland
234			1,250				Low woodland
235			1,131			119	Low woodland
236			946			304	Low woodland
237			689			561	Low woodland
238			608			642	Tall shrubland
239			162		1,088		Spinifex grassland
240			38		1,212		Spinifex grassland
241			299		951		Spinifex grassland
242			494		756		Spinifex grassland
243			106		1,144		Spinifex grassland
244					722	528	Spinifex grassland
245					1,198	52	Spinifex grassland
246		708			542		Unsuitable
247					980	270	Spinifex grassland
248					55	1,195	Tall shrubland
249			1,250				Low woodland
250			1,219			31	Low woodland
251			1,250				Low woodland
252			1,250				Low woodland
253			1,214			36	Low woodland
254			1,250				Low woodland
255			586			664	Tall shrubland
256			1,250				Low woodland

Unit No	Sites surveyed	Habitat cover (Hectares)				Dominant habitat
		Unsuitable	Low woodland	Medium woodland	Spinifex grassland	
257			8		1,242	Spinifex grassland
258			640		610	Low woodland
259			384		866	Spinifex grassland
260			132		1,118	Spinifex grassland
261					722	528 Spinifex grassland
262		644	52		131	423 Unsuitable
263		18			1,219	12 Spinifex grassland
264					807	443 Spinifex grassland
265			194		467	589 Tall shrubland
266			1,196		15	38 Low woodland
267		318	932			Low woodland
268			1,250			Low woodland
269			1,250			Low woodland
270			1,250			Low woodland
271			1,250			Low woodland
272			942			308 Low woodland
273			1,250			Low woodland
274			510		738	2 Spinifex grassland
275					1,250	Spinifex grassland
276			1,177		73	Low woodland
277			205		1,045	Spinifex grassland
278		694			8	548 Unsuitable
279		359			306	585 Tall shrubland
280		222	814		213	Low woodland
281					981	269 Spinifex grassland
282					390	860 Tall shrubland
283			176		901	173 Spinifex grassland
284			1,250			Low woodland
285			1,194		56	Low woodland
286			1,250			Low woodland
287			1,250			Low woodland
288			1,250			Low woodland
289			1,222			28 Low woodland
290			629			621 Low woodland
291			994		3	252 Low woodland
292			11		918	321 Spinifex grassland
293			525		725	Spinifex grassland
294			544		706	Spinifex grassland
295		314			636	300 Spinifex grassland
296		129	300		794	27 Spinifex grassland
297		28			442	781 Tall shrubland
298					794	456 Spinifex grassland
299					447	803 Tall shrubland
300			1,192		58	Low woodland

Unit No	Sites surveyed	Habitat cover (Hectares)				Dominant habitat	
		Unsuitable	Low woodland	Medium woodland	Spinifex grassland		Tall shrubland
301		75	1,175				Low woodland
302			824		233	193	Low woodland
303			1,250				Low woodland
304			1,249		1		Low woodland
305			972		278		Low woodland
306			227		433	589	Tall shrubland
307			1,025			225	Low woodland
308			162		691	397	Spinifex grassland
309					523	727	Tall shrubland
310			398		852		Spinifex grassland
311			601		649		Spinifex grassland
312			68		1,182		Spinifex grassland
313		17			915	318	Spinifex grassland
314			208		506	536	Tall shrubland
315			3		1,247		Spinifex grassland
316					495	755	Tall shrubland
317					1,232	18	Spinifex grassland
318			15		1,031	204	Spinifex grassland
319		359	885		6		Low woodland
320			810		384	56	Low woodland
321			1,250				Low woodland
322			1,250				Low woodland
323			678		572		Low woodland
324			78		1,172		Spinifex grassland
325			986			263	Low woodland
326			1,250				Low woodland
327					727	523	Spinifex grassland
328			346		903	1	Spinifex grassland
329			1,121		129		Low woodland
330			571		679		Spinifex grassland
331			352		898		Spinifex grassland
332		67			1,183		Spinifex grassland
333					700	550	Spinifex grassland
334					1,249	1	Spinifex grassland
335					623	627	Tall shrubland
336					763	487	Spinifex grassland
337					1,237	13	Spinifex grassland
338		48	1,011		191		Low woodland
339			1,021		229		Low woodland
340			405		287	558	Tall shrubland
341			1,250				Low woodland
342			206		1,044		Spinifex grassland
343					1,250		Spinifex grassland
344			143		844	263	Spinifex grassland

Unit No	Sites surveyed	Habitat cover (Hectares)				Dominant habitat	
		Unsuitable	Low woodland	Medium woodland	Spinifex grassland		Tall shrubland
345			1,122		2	126	Low woodland
346			190		297	763	Tall shrubland
347			422		786	42	Spinifex grassland
348			1,250				Low woodland
349			1,213		37		Low woodland
350					1,250		Spinifex grassland
351			555		695		Spinifex grassland
352			684		566		Low woodland
353			15		990	245	Spinifex grassland
354					1,012	238	Spinifex grassland
355					1,087	163	Spinifex grassland
356					1,206	44	Spinifex grassland
357					829	421	Spinifex grassland
358			857		367	26	Low woodland
359		441	661		148		Low woodland
360			752		496	2	Low woodland
361			1,181			69	Low woodland
362			793		457		Low woodland
363					1,250		Spinifex grassland
364					1,032	218	Spinifex grassland
365			642		444	164	Low woodland
366			547		703		Spinifex grassland
367					621	629	Tall shrubland
368			1,169		81		Low woodland
369			1,250				Low woodland
370			763		487		Low woodland
371			109		1,141		Spinifex grassland
372			337		913		Spinifex grassland
373			532		718		Spinifex grassland
374			212		1,024	14	Spinifex grassland
375					836	414	Spinifex grassland
376					607	643	Tall shrubland
377					879	371	Spinifex grassland
378					1,056	194	Spinifex grassland
379					864	386	Spinifex grassland
380		949	301				Unsuitable
381			429		641	179	Spinifex grassland
382			241		968	41	Spinifex grassland
383			1,012		238		Low woodland
384			418		832		Spinifex grassland
385					1,250		Spinifex grassland
386			549		701		Spinifex grassland
387			239		495	516	Tall shrubland
388					1,231	19	Spinifex grassland

Unit No	Sites surveyed	Habitat cover (Hectares)				Dominant habitat
		Unsuitable	Low woodland	Medium woodland	Spinifex grassland	
389		62	781		407	Low woodland
390			1,250			Low woodland
391			1,044			206 Low woodland
392			99		912	239 Spinifex grassland
393			68		1,182	Spinifex grassland
394			781		469	Low woodland
395					1,250	Spinifex grassland
396			380		870	Spinifex grassland
397					484	766 Tall shrubland
398					698	552 Spinifex grassland
399					444	806 Tall shrubland
400					1,250	Spinifex grassland
401			225		426	598 Tall shrubland
402		419	413		342	75 Unsuitable
403		86	593		464	107 Low woodland
404			111		690	449 Spinifex grassland
405			868		382	Low woodland
406					1,250	Spinifex grassland
407			128		1,122	Spinifex grassland
408					1,244	6 Spinifex grassland
409			170		1,036	45 Spinifex grassland
410			210		848	192 Spinifex grassland
411		78			1,172	Spinifex grassland
412			457		793	Spinifex grassland
413			1,244			6 Low woodland
414			246			1,004 Tall shrubland
415			431		819	Spinifex grassland
416			864		386	Low woodland
417			413		837	Spinifex grassland
418		4			1,246	Spinifex grassland
419			87		1,163	Spinifex grassland
420					1,124	126 Spinifex grassland
421					1,039	211 Spinifex grassland
422					151	1,099 Tall shrubland
423					1,206	44 Spinifex grassland
424					1,156	94 Spinifex grassland
425		244	432		426	147 Low woodland
426		350	382		518	Spinifex grassland
427					289	961 Tall shrubland
428			1,003		247	Low woodland
429			220		913	117 Spinifex grassland
430			440		810	Spinifex grassland
431			185		1,065	Spinifex grassland
432					1,250	Spinifex grassland

Unit No	Sites surveyed	Habitat cover (Hectares)				Dominant habitat	
		Unsuitable	Low woodland	Medium woodland	Spinifex grassland		Tall shrubland
433			400		380	470	Tall shrubland
434			328		651	271	Spinifex grassland
435			844		406		Low woodland
436			496		699	55	Spinifex grassland
437			898			352	Low woodland
438			534		52	664	Tall shrubland
439			1,081		169		Low woodland
440			827		423		Low woodland
441					1,250		Spinifex grassland
442					1,250		Spinifex grassland
443					1,250		Spinifex grassland
444			53		1,197		Spinifex grassland
445			90		948	212	Spinifex grassland
446					1,090	160	Spinifex grassland
447					697	553	Spinifex grassland
448					1,018	232	Spinifex grassland
449		15			962	273	Spinifex grassland
450		122	773		258	97	Low woodland
451					517	733	Tall shrubland
452			16		765	469	Spinifex grassland
453			300		592	359	Spinifex grassland
454					1,250		Spinifex grassland
455			716		534		Low woodland
456			77		1,173		Spinifex grassland
457					1,242	8	Spinifex grassland
458			860		118	272	Low woodland
459					1,197	53	Spinifex grassland
460			178		1,072		Spinifex grassland
461			134		422	693	Tall shrubland
462			240			1,010	Tall shrubland
463			845		388	18	Low woodland
464			1,250				Low woodland
465			391		859		Spinifex grassland
466					1,250		Spinifex grassland
467					1,250		Spinifex grassland
468			162		1,088		Spinifex grassland
469			350		900		Spinifex grassland
470					839	411	Spinifex grassland
471					166	1,084	Tall shrubland
472					989	261	Spinifex grassland
473		186	428		326	311	Low woodland
474					1,046	204	Spinifex grassland
475					395	855	Tall shrubland
476			187		1,063		Spinifex grassland

Unit No	Sites surveyed	Habitat cover (Hectares)				Dominant habitat	
		Unsuitable	Low woodland	Medium woodland	Spinifex grassland		Tall shrubland
477					688	562	Spinifex grassland
478			484		766		Spinifex grassland
479			342		908		Spinifex grassland
480			7		1,106	138	Spinifex grassland
481			131		485	634	Tall shrubland
482					1,108	142	Spinifex grassland
483			496		754		Spinifex grassland
484					1,250		Spinifex grassland
485					548	702	Tall shrubland
486			53			1,197	Tall shrubland
487			1,105		145		Low woodland
488			1,234		16		Low woodland
489					1,250		Spinifex grassland
490					1,250		Spinifex grassland
491			41		1,209		Spinifex grassland
492			378		872		Spinifex grassland
493					640	610	Spinifex grassland
494					6	1,244	Tall shrubland
495		121	58		589	482	Spinifex grassland
496					789	461	Spinifex grassland
497					480	770	Tall shrubland
498			128		1,012	110	Spinifex grassland
499					414	836	Tall shrubland
500					1,250		Spinifex grassland
501			531		589	129	Spinifex grassland
502			354		704	192	Spinifex grassland
503					1,000	250	Spinifex grassland
504					1,250		Spinifex grassland
505			4		1,246		Spinifex grassland
506					1,250		Spinifex grassland
507					1,250		Spinifex grassland
508					879	371	Spinifex grassland
509			646		102	502	Low woodland
510			785		465		Low woodland
511			136		1,114		Spinifex grassland
512					1,250		Spinifex grassland
513			362		888		Spinifex grassland
514			112		1,138		Spinifex grassland
515					698	552	Spinifex grassland
516					1,058	192	Spinifex grassland
517		160	274		312	504	Tall shrubland
518			21		737	492	Spinifex grassland
519		1			523	726	Tall shrubland
520		108			794	348	Spinifex grassland

Unit No	Sites surveyed	Habitat cover (Hectares)				Dominant habitat
		Unsuitable	Low woodland	Medium woodland	Spinifex grassland	
521			712		538	Low woodland
522					293	957 Tall shrubland
523					1,031	219 Spinifex grassland
524			434		399	417 Low woodland
525					778	472 Spinifex grassland
526					1,061	189 Spinifex grassland
527					1,250	Spinifex grassland
528	4		271		979	Spinifex grassland
529					1,250	Spinifex grassland
530					1,246	4 Spinifex grassland
531					1,040	210 Spinifex grassland
532			149		1,092	9 Spinifex grassland
533			329		921	Spinifex grassland
534					1,250	Spinifex grassland
535			456		794	Spinifex grassland
536			445		805	Spinifex grassland
537					166	1,084 Tall shrubland
538		175			644	431 Spinifex grassland
539			149		389	712 Tall shrubland
540		103			653	494 Spinifex grassland
541		321			864	65 Spinifex grassland
542		626	140		140	345 Unsuitable
543			197		610	443 Spinifex grassland
544					1,114	136 Spinifex grassland
545					81	1,169 Tall shrubland
546					1,155	95 Spinifex grassland
547					1,011	239 Spinifex grassland
548					1,204	46 Spinifex grassland
549	1				1,250	Spinifex grassland
550					1,250	Spinifex grassland
551					1,250	Spinifex grassland
552			322		928	Spinifex grassland
553		84			779	387 Spinifex grassland
554					1,250	Spinifex grassland
555					1,250	Spinifex grassland
556			141		1,109	Spinifex grassland
557			444		806	Spinifex grassland
558			61		1,189	Spinifex grassland
559			28		1,150	72 Spinifex grassland
560		53			891	306 Spinifex grassland
561			1,060		2	188 Low woodland
562			534		349	367 Low woodland
563		480			456	314 Unsuitable
564		915	198		137	Unsuitable

Unit No	Sites surveyed	Habitat cover (Hectares)				Dominant habitat
		Unsuitable	Low woodland	Medium woodland	Spinifex grassland	
565		468	702		79	Low woodland
566			387		296	Tall shrubland
567					965	Spinifex grassland
568			42		924	Spinifex grassland
569					1,247	Spinifex grassland
570					1,072	Spinifex grassland
571	1				1,241	Spinifex grassland
572					1,250	Spinifex grassland
573					1,250	Spinifex grassland
574			186		1,064	Spinifex grassland
575			441		809	Spinifex grassland
576		149			1,098	Spinifex grassland
577					1,250	Spinifex grassland
578					1,250	Spinifex grassland
579			230		1,020	Spinifex grassland
580			1,152		98	Low woodland
581			265		985	Spinifex grassland
582			293		503	Spinifex grassland
583		113	30		377	Tall shrubland
584			371		879	Spinifex grassland
585		61			749	Spinifex grassland
586		185	158		907	Spinifex grassland
587		581	199		470	Unsuitable
588		432	567		252	Low woodland
589			458		717	Spinifex grassland
590			590		351	Low woodland
591					1,250	Spinifex grassland
592					1,094	Spinifex grassland
593					267	Tall shrubland
594	1				1,120	Spinifex grassland
595					1,250	Spinifex grassland
596					1,250	Spinifex grassland
597			1,250			Low woodland
598			275		975	Spinifex grassland
599		312			938	Spinifex grassland
600		53			1,197	Spinifex grassland
601					1,250	Spinifex grassland
602			292		958	Spinifex grassland
603			449		801	Spinifex grassland
604			131		1,119	Spinifex grassland
605			191		1,059	Spinifex grassland
606			1,029		221	Low woodland
607			481		769	Spinifex grassland
608			679		571	Low woodland

Unit No	Sites surveyed	Habitat cover (Hectares)				Dominant habitat
		Unsuitable	Low woodland	Medium woodland	Spinifex grassland	
609		31	21		1,198	Spinifex grassland
610		84	533		633	Spinifex grassland
611		699	551			Unsuitable
612		442	514		294	Low woodland
613			466		659	125 Spinifex grassland
614			353		897	Spinifex grassland
615					1,250	Spinifex grassland
616			94		1,156	Spinifex grassland
617	1	178			16	1,057 Tall shrubland
618			343		901	6 Spinifex grassland
619					1,250	Spinifex grassland
620			971		279	Low woodland
621			1,250			Low woodland
622			136		1,114	Spinifex grassland
623		73	535		642	Spinifex grassland
624			77		1,173	Spinifex grassland
625	1				1,250	Spinifex grassland
626		28			1,222	Spinifex grassland
627			187		1,063	Spinifex grassland
628			700		550	Low woodland
629			835		415	Low woodland
630			303		947	Spinifex grassland
631			218		706	327 Spinifex grassland
632			515		735	Spinifex grassland
633			203		1,047	Spinifex grassland
634			757		493	Low woodland
635			550		700	Spinifex grassland
636		190	982		78	Low woodland
637			824		426	Low woodland
638			443		807	Spinifex grassland
639			605		645	Spinifex grassland
640			465		621	164 Spinifex grassland
641		205			930	115 Spinifex grassland
642		140	66		382	662 Tall shrubland
643			99		1,151	Spinifex grassland
644			91		1,159	Spinifex grassland
645			1,250			Low woodland
646			818		432	Low woodland
647			419		831	Spinifex grassland
648		82	1,148		21	Low woodland
649			108		1,142	Spinifex grassland
650					1,250	Spinifex grassland
651		127	162		961	Spinifex grassland
652			323		927	Spinifex grassland

Unit No	Sites surveyed	Habitat cover (Hectares)				Dominant habitat
		Unsuitable	Low woodland	Medium woodland	Spinifex grassland	
653			215		1,035	Spinifex grassland
654			436		814	Spinifex grassland
655			444		755	51 Spinifex grassland
656			999		251	Low woodland
657			202		1,048	Spinifex grassland
658			75		1,175	Spinifex grassland
659			65		1,185	Spinifex grassland
660	1		585		665	Spinifex grassland
661		21	1,047		182	Low woodland
662			208		1,042	Spinifex grassland
663			969		281	Low woodland
664			836		414	Low woodland
665			84		1,166	Spinifex grassland
666		39			811	401 Spinifex grassland
667			482		768	Spinifex grassland
668			222		1,028	Spinifex grassland
669			1,250			Low woodland
670			1,198		52	Low woodland
671			946		304	Low woodland
672			1,250			Low woodland
673	1	182	450		618	Spinifex grassland
674	4		135		1,115	Spinifex grassland
675					1,250	Spinifex grassland
676		118	145		987	Spinifex grassland
677			653		597	Low woodland
678			79		1,171	Spinifex grassland
679			360		890	Spinifex grassland
680			491		759	Spinifex grassland
681			373		877	Spinifex grassland
682					1,250	Spinifex grassland
683					1,250	Spinifex grassland
684			99		1,151	Spinifex grassland
685			897		353	Low woodland
686	3		362		888	Spinifex grassland
687			142		1,108	Spinifex grassland
688			674		576	Low woodland
689			274		498	477 Spinifex grassland
690					1,250	Spinifex grassland
691					1,250	Spinifex grassland
692			386		864	Spinifex grassland
693			1,065		185	Low woodland
694	1		1,250			Low woodland
695			1,250			Low woodland

Unit No	Sites surveyed	Habitat cover (Hectares)				Dominant habitat
		Unsuitable	Low woodland	Medium woodland	Spinifex grassland	
696			1,250			Low woodland
697			1,228		22	Low woodland
698	2		335		915	Spinifex grassland
699			1		1,249	Spinifex grassland
700		70	76		1,104	Spinifex grassland
701		107	91		1,052	Spinifex grassland
702			244		1,006	Spinifex grassland
703			739		511	Low woodland
704			551		699	Spinifex grassland
705			483		767	Spinifex grassland
706					1,250	Spinifex grassland
707			92		1,158	Spinifex grassland
708			153		1,097	Spinifex grassland
709					1,250	Spinifex grassland
710			567		683	Spinifex grassland
711	3				1,250	Spinifex grassland
712					1,250	Spinifex grassland
713			595		612	43 Spinifex grassland
714					1,250	Spinifex grassland
715					1,250	Spinifex grassland
716			355		895	Spinifex grassland
717			158		1,092	Spinifex grassland
718			1,075		175	Low woodland
719			1,250			Low woodland
720			1,250			Low woodland
721			1,250			Low woodland
722			467		783	Spinifex grassland
723			438		812	Spinifex grassland
724		28	334		888	Spinifex grassland
725			525		725	Spinifex grassland
726			415		835	Spinifex grassland
727			262		988	Spinifex grassland
728			65		1,185	Spinifex grassland
729			5		1,245	Spinifex grassland
730			39		1,211	Spinifex grassland
731		181	13		1,056	Spinifex grassland
732			89		1,161	Spinifex grassland
733			72		1,178	Spinifex grassland
734	2				1,250	Spinifex grassland
735					1,250	Spinifex grassland
736			45		1,205	Spinifex grassland
737					1,250	Spinifex grassland
738					1,250	Spinifex grassland
739					1,250	Spinifex grassland

Unit No	Sites surveyed	Habitat cover (Hectares)				Dominant habitat
		Unsuitable	Low woodland	Medium woodland	Spinifex grassland	
740			211		1,039	Spinifex grassland
741			240		1,010	Spinifex grassland
742			1,250			Low woodland
743			1,250			Low woodland
744			1,250			Low woodland
745			1,178		72	Low woodland
746					1,250	Spinifex grassland
747		23	262		965	Spinifex grassland
748		234			1,016	Spinifex grassland
749			411		839	Spinifex grassland
750			902		348	Low woodland
751			206		1,044	Spinifex grassland
752			102		1,148	Spinifex grassland
753			279		971	Spinifex grassland
754			65		1,185	Spinifex grassland
755			96		1,154	Spinifex grassland
756					1,250	Spinifex grassland
757					1,250	Spinifex grassland
758					1,250	Spinifex grassland
759					1,250	Spinifex grassland
760			86		1,164	Spinifex grassland
761			2		1,248	Spinifex grassland
762					1,250	Spinifex grassland
763			392		858	Spinifex grassland
764			328		922	Spinifex grassland
765			1,249		1	Low woodland
766			1,250			Low woodland
767			1,250			Low woodland
768			1,250			Low woodland
769			282		968	Spinifex grassland
770		102	171		977	Spinifex grassland
771			494		756	Spinifex grassland
772			166		1,084	Spinifex grassland
773			341		909	Spinifex grassland
774			68		1,182	Spinifex grassland
775			3		1,247	Spinifex grassland
776					1,250	Spinifex grassland
777					1,250	Spinifex grassland
778					1,250	Spinifex grassland
779					1,250	Spinifex grassland
780					1,250	Spinifex grassland
781					1,250	Spinifex grassland
782			177		1,073	Spinifex grassland
783			4		1,246	Spinifex grassland

Unit No	Sites surveyed	Habitat cover (Hectares)				Dominant habitat
		Unsuitable	Low woodland	Medium woodland	Spinifex grassland	
784			326		924	Spinifex grassland
785			383		867	Spinifex grassland
786			3		1,247	Spinifex grassland
787			1,205		45	Low woodland
788	1		1,017		233	Low woodland
789			958		292	Low woodland
790			1,076		174	Low woodland
791			1,191		59	Low woodland
792			169		1,081	Spinifex grassland
793			451		799	Spinifex grassland
794		289	173		788	Spinifex grassland
795			279		971	Spinifex grassland
796			368		882	Spinifex grassland
797			280		970	Spinifex grassland
798					1,250	Spinifex grassland
799			46		1,204	Spinifex grassland
800					1,250	Spinifex grassland
801			211		1,039	Spinifex grassland
802			282		968	Spinifex grassland
803					1,250	Spinifex grassland
804					1,250	Spinifex grassland
805			195		1,055	Spinifex grassland
806			51		1,199	Spinifex grassland
807			115		1,135	Spinifex grassland
808			254		996	Spinifex grassland
809			160		1,090	Spinifex grassland
810	1		163		1,087	Spinifex grassland
811	1		543		707	Spinifex grassland
812			306		944	Spinifex grassland
813			848		402	Low woodland
814			397		853	Spinifex grassland
815			369		881	Spinifex grassland
816			354		896	Spinifex grassland
817			429		821	Spinifex grassland
818		47	406		797	Spinifex grassland
819			293		957	Spinifex grassland
820			192		1,058	Spinifex grassland
821					1,250	Spinifex grassland
822					1,250	Spinifex grassland
823			849		401	Low woodland
824			956		294	Low woodland
825			65		1,185	Spinifex grassland
826					1,250	Spinifex grassland
827			189		1,061	Spinifex grassland

Unit No	Sites surveyed	Habitat cover (Hectares)				Dominant habitat
		Unsuitable	Low woodland	Medium woodland	Spinifex grassland	
828			3		1,247	Spinifex grassland
829					1,250	Spinifex grassland
830					1,250	Spinifex grassland
831			922		328	Low woodland
832					1,250	Spinifex grassland
833					1,250	Spinifex grassland
834					1,250	Spinifex grassland
835			233		1,017	Spinifex grassland
836			6		1,244	Spinifex grassland
837					1,250	Spinifex grassland
838					1,250	Spinifex grassland
839		291	79		880	Spinifex grassland
840		281	506		464	Low woodland
841			256		994	Spinifex grassland
842			19		1,231	Spinifex grassland
843					1,250	Spinifex grassland
844			208		1,042	Spinifex grassland
845					1,250	Spinifex grassland
846		375	875			Low woodland
847			1,111		139	Low woodland
848			171		1,079	Spinifex grassland
849			169		1,081	Spinifex grassland
850					1,250	Spinifex grassland
851			634		616	Low woodland
852					1,250	Spinifex grassland
853			359		891	Spinifex grassland
854			295		955	Spinifex grassland
855			70		1,180	Spinifex grassland
856					1,250	Spinifex grassland
857					1,250	Spinifex grassland
858					1,250	Spinifex grassland
859					1,250	Spinifex grassland
860					1,250	Spinifex grassland
861			215		1,035	Spinifex grassland
862		290	10		950	Spinifex grassland
863		280	282		688	Spinifex grassland
864			1		1,249	Spinifex grassland
865					1,250	Spinifex grassland
866			242		1,008	Spinifex grassland
867			47		1,203	Spinifex grassland
868		473	566		211	Low woodland
869		760	490			Unsuitable
870			349		901	Spinifex grassland
871			235		1,015	Spinifex grassland

Unit No	Sites surveyed	Habitat cover (Hectares)				Dominant habitat
		Unsuitable	Low woodland	Medium woodland	Spinifex grassland	
872					1,250	Spinifex grassland
873					1,250	Spinifex grassland
874			22		1,228	Spinifex grassland
875					1,250	Spinifex grassland
876			1,250			Low woodland
877			35		1,215	Spinifex grassland
878			114		1,136	Spinifex grassland
879	1				1,250	Spinifex grassland
880					1,250	Spinifex grassland
881					1,250	Spinifex grassland
882					1,250	Spinifex grassland
883					1,250	Spinifex grassland
884		6	745		499	Low woodland
885		44	404		801	Spinifex grassland
886			137		1,113	Spinifex grassland
887					1,250	Spinifex grassland
888			243		1,007	Spinifex grassland
889		29			1,221	Spinifex grassland
890		529	78		643	Spinifex grassland
891		62	737		452	Low woodland
892		516	661		73	Low woodland
893			982		268	Low woodland
894			476		774	Spinifex grassland
895			192		1,058	Spinifex grassland
896			456		794	Spinifex grassland
897					1,250	Spinifex grassland
898			590		660	Spinifex grassland
899			1,036		214	Low woodland
900			549		701	Spinifex grassland
901			89		1,161	Spinifex grassland
902					1,250	Spinifex grassland
903					1,250	Spinifex grassland
904					1,250	Spinifex grassland
905					1,250	Spinifex grassland
906					1,250	Spinifex grassland
907			106		1,144	Spinifex grassland
908		393	155		703	Spinifex grassland
909			212		1,038	Spinifex grassland
910					1,250	Spinifex grassland
911		121	264		865	Spinifex grassland
912			40		1,210	Spinifex grassland
913			147		1,103	Spinifex grassland
914		343	251		656	Spinifex grassland
915		144	1,106			Low woodland

Unit No	Sites surveyed	Habitat cover (Hectares)				Dominant habitat
		Unsuitable	Low woodland	Medium woodland	Spinifex grassland	
916			830		420	Low woodland
917			683		567	Low woodland
918					1,250	Spinifex grassland
919			214		1,036	Spinifex grassland
920					1,250	Spinifex grassland
921			1,250			Low woodland
922					1,250	Spinifex grassland
923					1,250	Spinifex grassland
924					1,250	Spinifex grassland
925					1,250	Spinifex grassland
926			531		719	Spinifex grassland
927			594		656	Spinifex grassland
928		216	183		851	Spinifex grassland
929			231		1,019	Spinifex grassland
930		96			1,154	Spinifex grassland
931		29	275		947	Spinifex grassland
932			67		1,183	Spinifex grassland
933			111		1,139	Spinifex grassland
934	3	336	200		714	Spinifex grassland
935			1,131		119	Low woodland
936			1,239		11	Low woodland
937			246		1,004	Spinifex grassland
938			642		608	Low woodland
939					1,250	Spinifex grassland
940			729		521	Low woodland
941					1,250	Spinifex grassland
942					1,250	Spinifex grassland
943			713		537	Low woodland
944			420		830	Spinifex grassland
945		5	188		1,056	Spinifex grassland
946		98	137		1,015	Spinifex grassland
947		69			1,181	Spinifex grassland
948			355		895	Spinifex grassland
949					1,250	Spinifex grassland
950			1		1,249	Spinifex grassland
951		118	1,132			Low woodland
952			1,250			Low woodland
953			244		1,006	Spinifex grassland
954					1,250	Spinifex grassland
955			65		1,185	Spinifex grassland
956					1,250	Spinifex grassland
957			618		632	Spinifex grassland
958			241		1,009	Spinifex grassland
959		169	156		924	Spinifex grassland

Unit No	Sites surveyed	Habitat cover (Hectares)				Dominant habitat
		Unsuitable	Low woodland	Medium woodland	Spinifex grassland	
960			634		616	Low woodland
961	67		37		1,146	Spinifex grassland
962			222		1,028	Spinifex grassland
963					1,250	Spinifex grassland
964			294		956	Spinifex grassland
965	469		34		747	Spinifex grassland
966			1,247		3	Low woodland
967			500		750	Spinifex grassland
968					1,250	Spinifex grassland
969			299		951	Spinifex grassland
970					1,250	Spinifex grassland
971			417		833	Spinifex grassland
972	244		8		998	Spinifex grassland
973	132		351		768	Spinifex grassland
974	218		136		895	Spinifex grassland
975					1,250	Spinifex grassland
976			222		1,028	Spinifex grassland
977					1,250	Spinifex grassland
978			2		1,248	Spinifex grassland
979	14		656		580	Low woodland
980			476		774	Spinifex grassland
981					1,250	Spinifex grassland
982					1,250	Spinifex grassland
983					1,250	Spinifex grassland
984	210		102		938	Spinifex grassland
985	189		1		1,060	Spinifex grassland
986	371		90		789	Spinifex grassland
987			102		1,148	Spinifex grassland
988					1,250	Spinifex grassland
989			171		1,079	Spinifex grassland
990			60		1,190	Spinifex grassland
991	280				970	Spinifex grassland
992			22		1,228	Spinifex grassland
993					1,250	Spinifex grassland
994					1,250	Spinifex grassland
995					1,250	Spinifex grassland
996			146		1,104	Spinifex grassland
997			406		844	Spinifex grassland
998			756		494	Low woodland
999			285		965	Spinifex grassland
1000			171		1,079	Spinifex grassland
1001			396		854	Spinifex grassland
1002			152		1,098	Spinifex grassland
1003					1,250	Spinifex grassland

Unit No	Sites surveyed	Habitat cover (Hectares)				Dominant habitat
		Unsuitable	Low woodland	Medium woodland	Spinifex grassland	
1004		308			942	Spinifex grassland
1005					1,250	Spinifex grassland
1006		49			1,201	Spinifex grassland
1007					1,250	Spinifex grassland
1008			180		1,070	Spinifex grassland
1009		258	684		308	Low woodland
1010			310		940	Spinifex grassland
1011		838	264		148	Unsuitable
1012					1,250	Spinifex grassland
1013			269		981	Spinifex grassland
1014			153		1,097	Spinifex grassland
1015			261		989	Spinifex grassland
1016			324		926	Spinifex grassland
1017		171			1,079	Spinifex grassland
1018		721			529	Unsuitable
1019					1,250	Spinifex grassland
1020					1,250	Spinifex grassland
1021			768		482	Low woodland
1022		124	295		831	Spinifex grassland
1023		39	1		1,209	Spinifex grassland
1024			444		806	Spinifex grassland
1025			38		1,212	Spinifex grassland
1026	3				1,250	Spinifex grassland
1027			444		806	Spinifex grassland
1028	3	14	52		1,184	Spinifex grassland
1029					1,250	Spinifex grassland
1030		52			1,198	Spinifex grassland
1031					1,250	Spinifex grassland
1032			266		984	Spinifex grassland
1033		601	351		298	Unsuitable
1034					1,250	Spinifex grassland
1035					1,250	Spinifex grassland
1036	1		123		1,127	Spinifex grassland
1037	8		212		1,038	Spinifex grassland
1038	19		1,242		8	Low woodland
1039					1,250	Spinifex grassland
1040		217			1,033	Spinifex grassland
1041					1,250	Spinifex grassland
1042		245	762		243	Low woodland
1043		703	291		257	Unsuitable
1044			91		1,159	Spinifex grassland
1045			326		924	Spinifex grassland
1046					1,250	Spinifex grassland

Unit No	Sites surveyed	Habitat cover (Hectares)				Dominant habitat
		Unsuitable	Low woodland	Medium woodland	Spinifex grassland	
1047			616		634	Spinifex grassland
1048	7		759		491	Low woodland
1049			202		1,048	Spinifex grassland
1050					1,250	Spinifex grassland
1051		5			1,245	Spinifex grassland
1052		191	43		1,016	Spinifex grassland
1053		217			1,033	Spinifex grassland
1054					1,250	Spinifex grassland
1055					1,250	Spinifex grassland
1056			59		1,191	Spinifex grassland
1057			710		540	Low woodland
1058			1,234		16	Low woodland
1059					1,250	Spinifex grassland
1060		262	364		625	Spinifex grassland
1061		857	91		302	Unsuitable
1062		973			277	Unsuitable
1063			313		937	Spinifex grassland
1064			240		1,010	Spinifex grassland
1065			173		1,077	Spinifex grassland
1066			449		801	Spinifex grassland
1067			1,250			Low woodland
1068			436		814	Spinifex grassland
1069					1,250	Spinifex grassland
1070					1,250	Spinifex grassland
1071		590			660	Spinifex grassland
1072		162	99		989	Spinifex grassland
1073					1,250	Spinifex grassland
1074			181		1,069	Spinifex grassland
1075			993		257	Low woodland
1076	4		513		737	Spinifex grassland
1077			1,250			Low woodland
1078	7				1,250	Spinifex grassland
1079			821		429	Low woodland
1080		1,029			221	Unsuitable
1081		807			443	Unsuitable
1082		379	117		754	Spinifex grassland
1083					1,250	Spinifex grassland
1084	2		671		579	Low woodland
1085	8		512		738	Spinifex grassland
1086			574		676	Spinifex grassland
1087			129		1,121	Spinifex grassland
1088	1		3		1,247	Spinifex grassland
1089		677			573	Unsuitable

Unit No	Sites surveyed	Habitat cover (Hectares)				Dominant habitat
		Unsuitable	Low woodland	Medium woodland	Spinifex grassland	
1090		1,209			41	Unsuitable
1091		549			701	Spinifex grassland
1092	1	230			1,020	Spinifex grassland
1093					1,250	Spinifex grassland
1094	5		323		927	Spinifex grassland
1095			125		1,125	Spinifex grassland
1096			761		489	Low woodland
1097					1,250	Spinifex grassland
1098			159		1,091	Spinifex grassland
1099		244			1,006	Spinifex grassland
1100		1,022			228	Unsuitable
1101		1,054			196	Unsuitable
1102		20			1,230	Spinifex grassland
1103					1,250	Spinifex grassland
1104			669		581	Low woodland
1105					1,250	Spinifex grassland
1106			4		1,246	Spinifex grassland
1107					1,250	Spinifex grassland
1108					1,250	Spinifex grassland
1109					1,250	Spinifex grassland
1110		23			1,227	Spinifex grassland
1111		678			572	Unsuitable
1112		614			636	Spinifex grassland
1113		170			1,080	Spinifex grassland
1114					1,250	Spinifex grassland
1115					1,250	Spinifex grassland
1116					1,250	Spinifex grassland
1117					1,250	Spinifex grassland
1118					1,250	Spinifex grassland
1119					1,250	Spinifex grassland
1120					1,250	Spinifex grassland
1121		116			1,134	Spinifex grassland
1122		440			810	Spinifex grassland
1123		119	66		1,065	Spinifex grassland
1124					1,250	Spinifex grassland
1125					1,250	Spinifex grassland
1126					1,250	Spinifex grassland
1127					1,250	Spinifex grassland
1128					1,250	Spinifex grassland
1129		58			1,192	Spinifex grassland
1130					1,250	Spinifex grassland
1131		51			1,199	Spinifex grassland
1132			132		1,118	Spinifex grassland
1133					1,250	Spinifex grassland

Unit No	Sites surveyed	Habitat cover (Hectares)				Dominant habitat
		Unsuitable	Low woodland	Medium woodland	Spinifex grassland	
1134					1,250	Spinifex grassland
1135					1,250	Spinifex grassland
1136					1,250	Spinifex grassland
1137					1,250	Spinifex grassland
1138					1,250	Spinifex grassland
1139					1,250	Spinifex grassland
1140			19		1,231	Spinifex grassland
1141			261		989	Spinifex grassland
1142					1,250	Spinifex grassland
1143					1,250	Spinifex grassland
1144			595		655	Spinifex grassland
1145					1,250	Spinifex grassland
1146					1,250	Spinifex grassland
1147	4				1,250	Spinifex grassland
1148	7				1,250	Spinifex grassland
1149	1		374		876	Spinifex grassland
1150					1,250	Spinifex grassland
1151					1,250	Spinifex grassland
1152			49		1,201	Spinifex grassland
1153			617		633	Spinifex grassland
1154					1,250	Spinifex grassland
1155	2				1,250	Spinifex grassland
1156	13				1,250	Spinifex grassland
1157	5		70		1,180	Spinifex grassland
1158					1,250	Spinifex grassland
1159					1,250	Spinifex grassland
1160			170		1,080	Spinifex grassland
1161					1,250	Spinifex grassland
1162					1,250	Spinifex grassland
1163					1,250	Spinifex grassland
1164	29				1,250	Spinifex grassland
1165	6				1,250	Spinifex grassland
1166					1,250	Spinifex grassland
1167					1,250	Spinifex grassland
1168			384		866	Spinifex grassland
1169					1,250	Spinifex grassland
1170					1,250	Spinifex grassland
1171					1,250	Spinifex grassland
1172	4				1,250	Spinifex grassland
1173	2				1,250	Spinifex grassland
1174					1,250	Spinifex grassland
1175					1,250	Spinifex grassland
1176					1,250	Spinifex grassland

Unit No	Sites surveyed	Habitat cover (Hectares)				Dominant habitat
		Unsuitable	Low woodland	Medium woodland	Spinifex grassland	
1177					1,250	Spinifex grassland
1178					1,250	Spinifex grassland
1179					1,250	Spinifex grassland
1180	3				1,250	Spinifex grassland
1181			37		1,213	Spinifex grassland
1182					1,250	Spinifex grassland
1183					1,250	Spinifex grassland
1184			332		918	Spinifex grassland
1185					1,250	Spinifex grassland
1186					1,250	Spinifex grassland
1187	9				1,250	Spinifex grassland
1188	5		169		1,081	Spinifex grassland
1189					1,250	Spinifex grassland
1190		44			1,206	Spinifex grassland
1191					1,250	Spinifex grassland
1192					1,250	Spinifex grassland
1193					1,250	Spinifex grassland
1194	9				1,250	Spinifex grassland
1195			315		935	Spinifex grassland
1196					1,250	Spinifex grassland
1197					1,250	Spinifex grassland
1198					1,250	Spinifex grassland
1199	5				1,250	Spinifex grassland
1200	3				1,250	Spinifex grassland
1201					1,250	Spinifex grassland
1202			58		1,192	Spinifex grassland
1203		158			1,092	Spinifex grassland
1204					1,250	Spinifex grassland
1205					1,250	Spinifex grassland
1206					1,250	Spinifex grassland
1207					1,250	Spinifex grassland
1208		42			1,208	Spinifex grassland
1209					1,250	Spinifex grassland
1210					1,250	Spinifex grassland
1211					1,250	Spinifex grassland
1212					1,250	Spinifex grassland
1213					1,250	Spinifex grassland
1214					1,250	Spinifex grassland
1215					1,250	Spinifex grassland
1216				57	1,193	Spinifex grassland
1217					1,250	Spinifex grassland
1218					1,250	Spinifex grassland
1219					1,250	Spinifex grassland

Unit No	Sites surveyed	Habitat cover (Hectares)					Dominant habitat
		Unsuitable	Low woodland	Medium woodland	Spinifex grassland	Tall shrubland	
1220				144	1,106		Spinifex grassland
1221					1,250		Spinifex grassland