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Survey for the Bilby *Macrotis lagotis* and Spectacled Hare-Wallaby *Lagorchestes conspicillatus* on Anna Plains Station

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1 INTRODUCTION

Anna Plains Cattle Co Pty Ltd is intending to develop pivot-irrigated pasture on Anna Plains Station, approximately 150 km south-west of Broome (see Figure 1). The proposed development envelope is a rectangle of 1 x 2 km covering 200 ha. The proposed development site is located in Dampierland, inland of the eastern end of Eighty Mile Beach. To inform an environmental impact assessment in support of a Clearing Permit Application, a survey for the Greater Bilby *Macrotis lagotis* and Spectacled Hare-Wallaby *Lagorchestes conspicillatus* was conducted. The Bilby is listed as “Vulnerable” under the *Environment Protection and Biodiversity Conservation (EPBC) Act 1999* (Cwlth) and the *Wildlife Conservation Act 1950* (WA), whilst the Spectacled Hare-Wallaby is listed by Department of Biodiversity, Conservation and Attractions (DBCA) as Priority 3.

The vegetation across the development area was comprised mostly of scattered *Corymbia* over mixed Acacia shrubs, over hummock Spinifex grassland on red sandy-loam soils. Views of the vegetation present across the development envelope can be seen in Plates 1 and 2. A large part of the development site had been burnt several years previously as can be seen in Plate 1.

2 METHODS

The survey methods were designed by Dr Mike Bamford (B.Sc. (Biol.), Hons. (Biol.), Ph.D. (Biol.)) in consultation with Dr Manda Page (Principal Zoologist, DBCA). Dr Page indicated that (Pers. Comm. 9th August 2017):

- The proposed survey methodology was consistent with the DBCA bilby survey guidelines; and
- The approach for Spectacled Hare-Wallaby should focus on management measures (rather than detailed surveys) because they can be difficult to detect via surveys, however easily flush if approached and do not shelter in burrows, so therefore will leave the area if the clearing is done in a one directional manner.

Field investigations involved ground-truthing the environment and searching for evidence of Bilbies and Spectacled Hare-Wallaby.

A structured approach was followed by walking a series of transects across the proposed development area.

Bilby recorded home ranges (over which foraging activity is dispersed and thus detectable) are in the order of 11.3 to 16.2 ha, or 250 m in radius (Johnson 1989, citing other authors), although Bamford Consulting Ecologists records suggest that at least in desert country, home ranges are large and foraging signs are spread over a radius of 400-500 m. This means that transects spaced at even 500 m apart can be very certain of detecting resident Bilbies, but a tighter spread of transects (200-400 m spacing) is recommended to allow for asymmetric foraging areas and to increase the certainty of detecting even foraging by a passing individual, and of detecting old signs. It also increases the chance of encountering high density (and therefore easy to detect) foraging signs, as these are not spread evenly across a home range.

This transect approach also allows for opportunistic searches for signs (scats, tracks) of Spectacled Hare-Wallaby as well as opportunistic observations of individuals which could be flushed in close proximity to transects walked.

Mr Brenden Metcalf (B.Sc. (Env. Sci.), Hons. (Env. Sci.)) and Dr Barry Shepherd (B.Sc. Hons. (Env. Biol.), Ph.D. (Ecol.)) conducted a thorough survey for Bilbies and Spectacled Hare-Wallabies on the morning of 15th August 2017. The surveyors walked a series of transects spaced 300 m apart across the development envelope. See Figure 2 for survey effort. The survey was based upon searching for signs of the Bilby including foraging diggings, burrows, scats and footprints. Signs of Hare-Wallabies were limited to finding scats or seeing the animals themselves.



Figure 1. Site location plan.

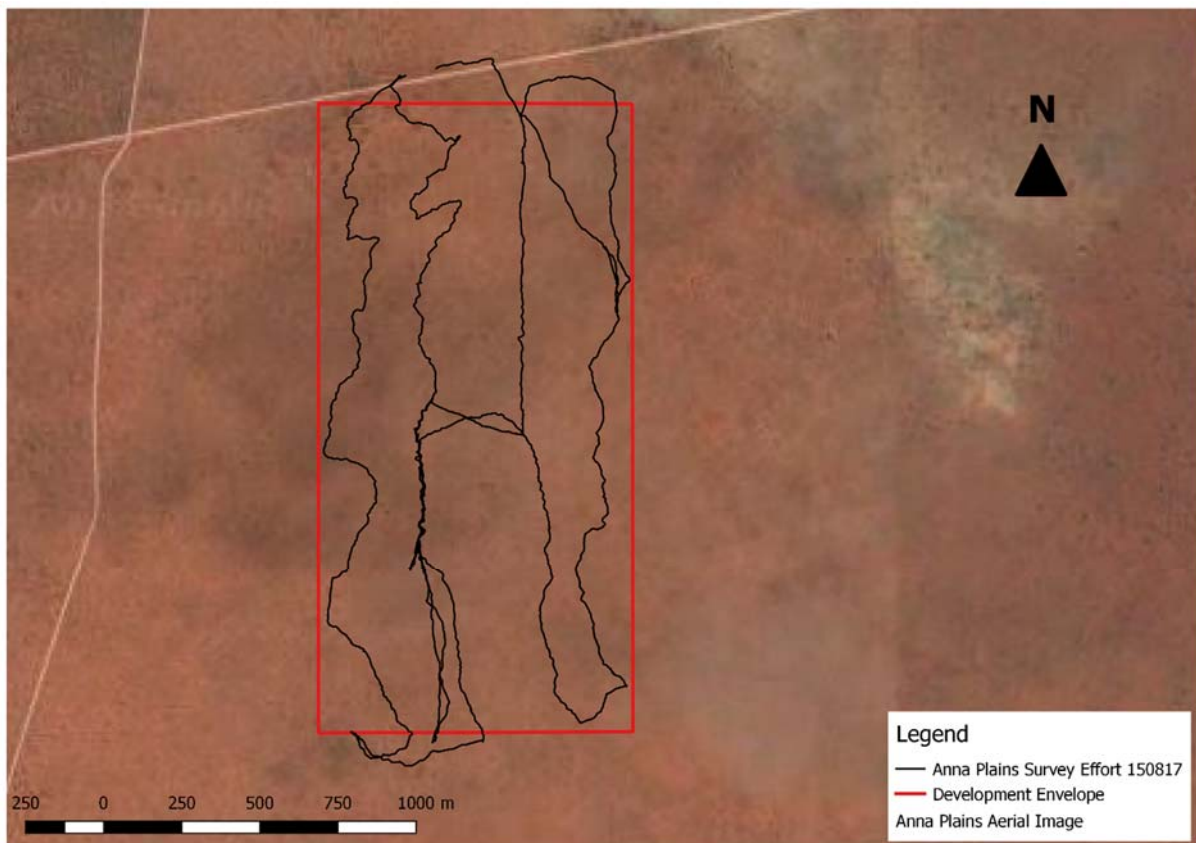


Figure 2. Site plan showing survey effort on pivot development area.

3 RESULTS

No signs of Bilbies were found on or around the development envelope. If Bilbies had been currently or recently active, it is considered that signs would have been found through the intensity of the survey and the relatively large area across which Bilbies are active when resident.

No Spectacled Hare-Wallabies were observed but two sets of relatively recent scats (see Plate 3) potentially from this species were found towards the southern end of the development envelope.

Agile Wallabies *Macropus agilis* were frequently observed in the area surrounding the development.

Cat and suspected Fox tracks were found occasionally within the vegetation on the development footprint. Occasional foraging diggings of goanna were also found across the development envelope.

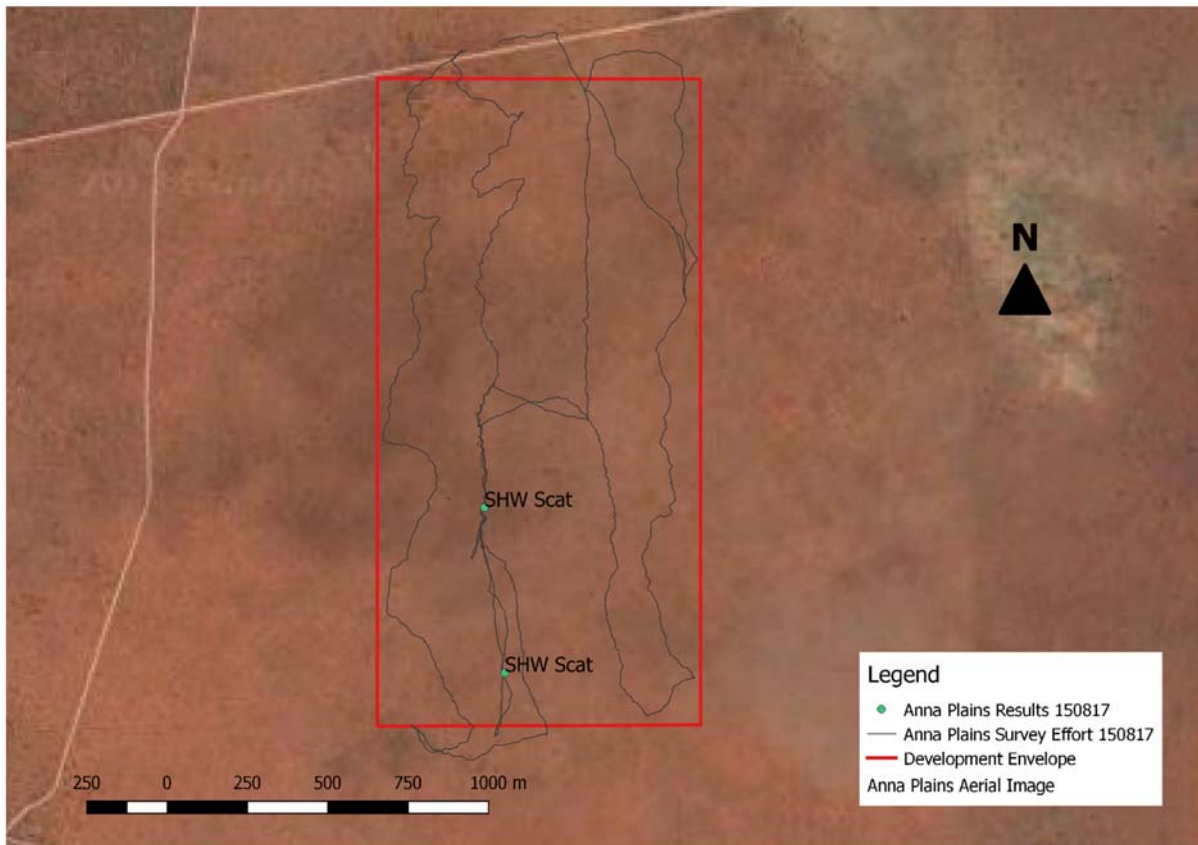


Figure 3. Results of the survey showing locations of probable scats of Spectacled Hare-wallaby.

4 CONCLUSIONS AND RECOMMENDATIONS

It is concluded that Bilbies are not currently present within the development envelope and no signs of recent activity could be found. Acacia and other woody shrubs were sparse across most of the development envelope, and sub-optimal habitat may be the reason for their absence. Bilbies can quickly disappear and reappear in an area where suitable habitat exists and, as the Acacia recovers from the effects of bushfire, Bilbies may return. Bilbies are prone to injury and death during vegetation clearance due to their habit of digging in and backfilling their burrows behind them when threatened. Burrows and Bilbies within would be crushed by land-clearing equipment if the Bilbies are not relocated or moved on beforehand. It is therefore recommended that the site is checked for Bilby presence immediately prior to vegetation clearing. If Bilbies are found to be present, management measures for their safe removal should be defined and agreed with the Western Australian Department of Water and Environmental Regulation (DWER) and in consultation with the Department of Biodiversity Conservation and Attractions (DBCA).

The presence of scats that are potentially from Spectacled Hare-Wallaby indicate the presence of this species on site in the recent past. Because this species lives wholly above ground, will flush from cover if approached and disperse rapidly, they are not considered to be highly at risk during vegetation clearance unless they are restricted from dispersing. The practise of clearing vegetation from one direction and allowing some vegetation to remain outside the pivots (as an escape path to other habitat) should provide necessary protection for Spectacled Hare-Wallabies and other above-ground macropods.



Plate 1. View of vegetation in north of development envelope showing evidence of bushfire approximately two years previous.



Plate 2. View of typical vegetation in the middle of development envelope.

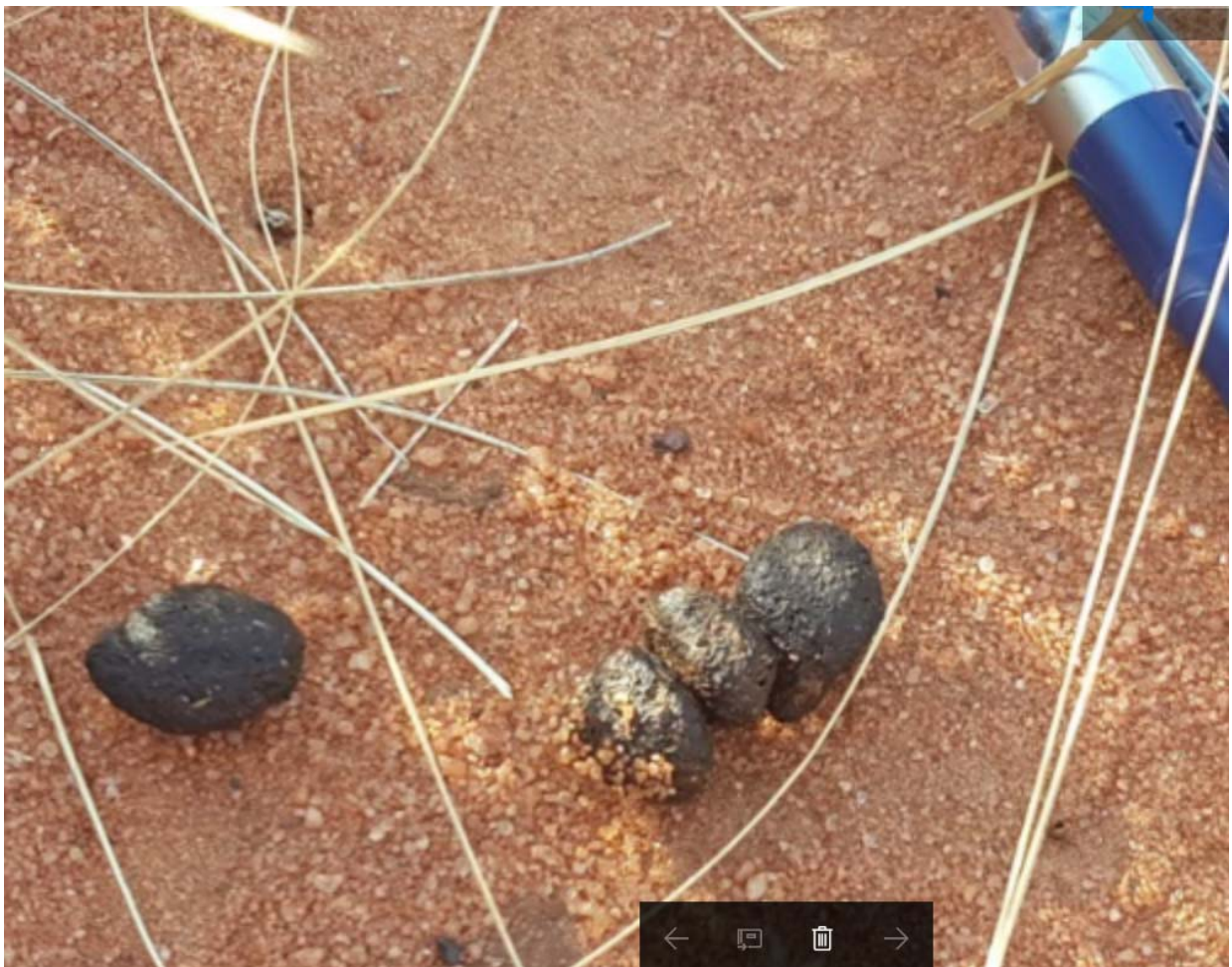


Plate 3. Scats, possibly of Spectacled Hare-Wallaby, found within the development envelope.



Figure 4. Spectacled Hare-wallaby scats for comparison (from Triggs, 2004).

REFERENCES

Triggs, B. (2004) *Tracks, Scats and Other Traces: A Field Guide to Australian Mammals*. Oxford University Press, Australia and New Zealand.

Appendix 1. Annotated species list for pivot area

1	Asian House Gecko	Around the Anna Plains homestead
2	<i>Ctenophorus isolepis</i>	Very common throughout the study area
3	Straw-necked Ibis	One at the Anna Plains homestead, on lawn
4	Black Kite	Several seen on Anna Plains entrance road
5	Whistling Kite	One seen on Anna Plains entrance road
6	Brown Goshawk	Possibly seen at south-western edge of the study area
7	Wedge-tailed Eagle	One seen on Anna Plains entrance road, near the study area
8	Brown Falcon	Several seen and heard over the study area
9	Australian Bustard	Possible tracks found within the study area
10	Bush-stone Curlew	At least one heard overnight at the Anna Plains homestead
11	Little Button-quail	Several flushed from hummock/tussock grassland areas within the study area
12	Crested Pigeon	Several pairs seen throughout the study area
13	Red-winged Parrot	Several seen on the Anna Plains entrance road
14	Budgerigar	One heard/seen in the south end of the study area
15	Horsfield's Bronze-Cuckoo	A pair seen and heard in the south end of the study area
16	Spotted Nightjar	One seen around the Anna Plains homestead
17	Red-backed Kingfisher	Several seen in the study area
18	Rainbow Bee-eater	Numerous pairs recorded from within the study area
19	Variegated Fairy-wren	Numerous family groups recorded from within the study area; only an occasional male sighted.
20	Yellow-throated Miner	Abundant around the Anna Plains homestead, only occasionally heard/seen in the study area
21	Singing Honeyeater	Common in the study area
22	Chestnut-crowned Babbler	Several family groups recorded from within the study area
23	Willie Wagtail	Common along the Anna Plains entrance road and seen occasionally in the study area
24	Australian Magpie-lark	Several seen and heard around the Anna Plains homestead
25	White-winged Triller	Common in the study area
26	Black-faced Woodswallow	Common in the study area
27	Pied Butcherbird	A family group with young around the Anna Plains homestead. Several recorded from the study area
28	Torresian Crow	Several seen and heard throughout the area
29	Zebra Finch	Small groups heard/seen within the study area
30	Brown Songlark	Several heard and seen within the study area
31	Agile Wallaby	Numerous seen along the Anna Plains entrance road during the evening
32	Spectacled Hare-Wallaby	Probable scats found. Checked and confirmed with reference photographs

33	Camel	Reportedly common in the area
34	Dog/dingo	Reportedly common in the area, but subject to control by shooting
35	Fox	Reportedly common in the area, but subject to control by shooting
36	Feral Cat	Reportedly common in the area, but subject to control by shooting; numerous prints recorded from the study area.