M.J. & A.R. Bamford
CONSULTING ECOLOGISTS
23 Plover Way,
Kingsley, WA, 6026
ph: 08 9309 3671 fx: 08 9409 2710
email: bamford.consulting@iinet.net.au
ABN 84 926 103 081

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Northern Minerals Browns Range Project

Pre-Clearing Survey for the Greater Bilby April 2017

INTRODUCTION

Northern Minerals is developing the Browns Range Rare Earths Project in the south-eastern Kimberley. During field investigations conducted to support application for environmental approval, evidence of two species of high conservation significance, the Greater Bilby *Macrotis lagotis* and the Spectacled Hare-Wallaby *Lagostrophus conspicillatus*, was found in the project area. The evidence consisted only of old scats and subsequent investigations failed to locate extant population, but as a result of these findings the company made a commitment, in response to Ministerial statement 986, to conduct pre-clearing survey for these species to avoid direct impacts. Methods for pre-clearing surveys are outlined in the Conservation Significant Fauna Management Plan (Northern Minerals 2014). They effectively require a detailed site inspection and search for evidence of the significant species to be carried out in proposed clearing areas within 28 days of clearing commencing. The Management Plan also covers the Brush-tailed Mulgara *Dasycercus blythi*, a Priority 4 species (a listing separate from legislation and of lower significance) for which some evidence was also found in the project area.

METHODS

Evidence of the Greater Bilby is comparatively easy to find, as the species leaves distinctive tracks, foraging holes and occasionally scats, and also constructs large burrows (similar in size and shape to a rabbit burrow). In the sandy environments favoured by this species, such evidence is conspicuous and even the tracks will persist for weeks. The Bilby is at risk during clearing operations only if an animal is present in a burrow when and where clearing takes place. Therefore, the procedure with Bilbies is to search for evidence that the species is present in an area (this will usually be tracks and foraging holes) and, where such evidence is found, to undertake intensive searching to locate burrows. If burrows are found in clearing areas, they then need to be checked for occupancy. Bilbies use multiple burrows at any one time, and thus can be encouraged to abandon burrows that make them vulnerable to clearing, such as by filling those burrows in when it is confirmed that no Bilby is present. This can be done through a combination of lightly blocking burrows with dead grass and monitoring Bilby movement with motion-sensitive cameras.

The Spectacled Hare-Wallaby is less easy to find, as it shelters during the day in a hollow beneath a bush or clump of spinifex, and the only evidence it leaves are tracks and occasional scats. Fortunately it is also less at risk from injury during clearing, as it shelters on the

surface and will bolt for alternative cover if disturbed. Where the species is suspected of being present, clearing needs to take place so that cover such as dense clumps of spinifex is disturbed so that animals can move away. This should be achieved through the normal process of clearing, but clearing should proceed so that disturbed animals can move away to safety. For example, clearing could proceed progressively across a site rather than in a manner that leaves intact native vegetation surrounded by cleared land.

The Brush-tailed Mulgara constructs distinctive burrows that can be found by walking slowly through spinifex country. Previous studies have found that they can be trapped at their burrow immediately prior to clearing and then relocated.

PRE-CLEARING SURVEYS

Pre-clearing surveys were undertaken from 1-3 February and 24-28 April 2017. The February surveys looked only at the pipeline route from the water supply bore to the future mining and operations area. The entire pipeline route was walked to look for species' evidence. This survey was carried out by Mike Bamford and Jeff Turpin from Bamford Consulting Ecologists (BCE). The April survey repeated this route, as clearing had been delayed, and also surveyed a range of other infrastructure areas planned for clearing in May 2017. These included the airstrip, first mining areas, access roads, gravel pits and overburden stockpile areas (Figure 1 and Table 1). The main entrance road was also surveyed as it may require some widening. All areas except the main entrance road were walked with two personnel spaced about 30-50m apart in the broader sites. The main entrance road was not walked but was driven along very slowly (c. 20kph) so that personnel could look for distinctive tracks in the sand. Personnel also alighted at several locations to carry out foot-searching in areas of particularly suitable habitat. This survey was carried out by Mike Bamford (BCE) and Anton Smit (Northern Minerals).

Redacted: Location of Sensitive Species was presented

Table 1. Key to locations given in Figure 1.

Area No	Name	Area No	Name
1	Wolverine Pit	17	Gambit East Pit 1
2	Haul Road	18	Gambit Gravel Pit
3	Wolverine Waste Dump	19	Gambit Haul Roads
4	Haul Road Realignment	20	TSF; Drains; and Sediment Retention Pond
5	Airstrip	21	Accommodation Village
6	Turkeys Nest Dam	22	Roadside Infrastructure
7	Borrow Pit 1	23	Haul Road Infill Area
8	Borrow Pit 2	24	Landfill; Magazine; ANE Compound
9	Village Access Road	25	Gravel Pit Access Road
10	Evaporation Pond	26	Gravel Pit
11	Gambit Central Pit	27	Plant and ROM
12	Gambit West Pit	28	Access Road 2
13	Gambit WRL	29	Access Road 1
14	Sediment Pond	30	Evaporation Pond Access
15	Gambit Pit Infill Area	31	Pipeline
16	Gambit East Pit 2		

RESULTS

The February survey of the pipeline route found no evidence of any target species. This was despite most of the alignment passing through suitable spinifex hummock grassland on sandy-loam soil.

The April survey found recent (within a week) evidence of Bilbies at three locations and a probable track of the Spectacled Hare-Wallaby at one location. There was some old (several months) evidence of Bilby at another location along the entrance road (Figure 2). Details on all locations are given in Appendix One, with each location given a code number (e.g. NMB1, NMB2).

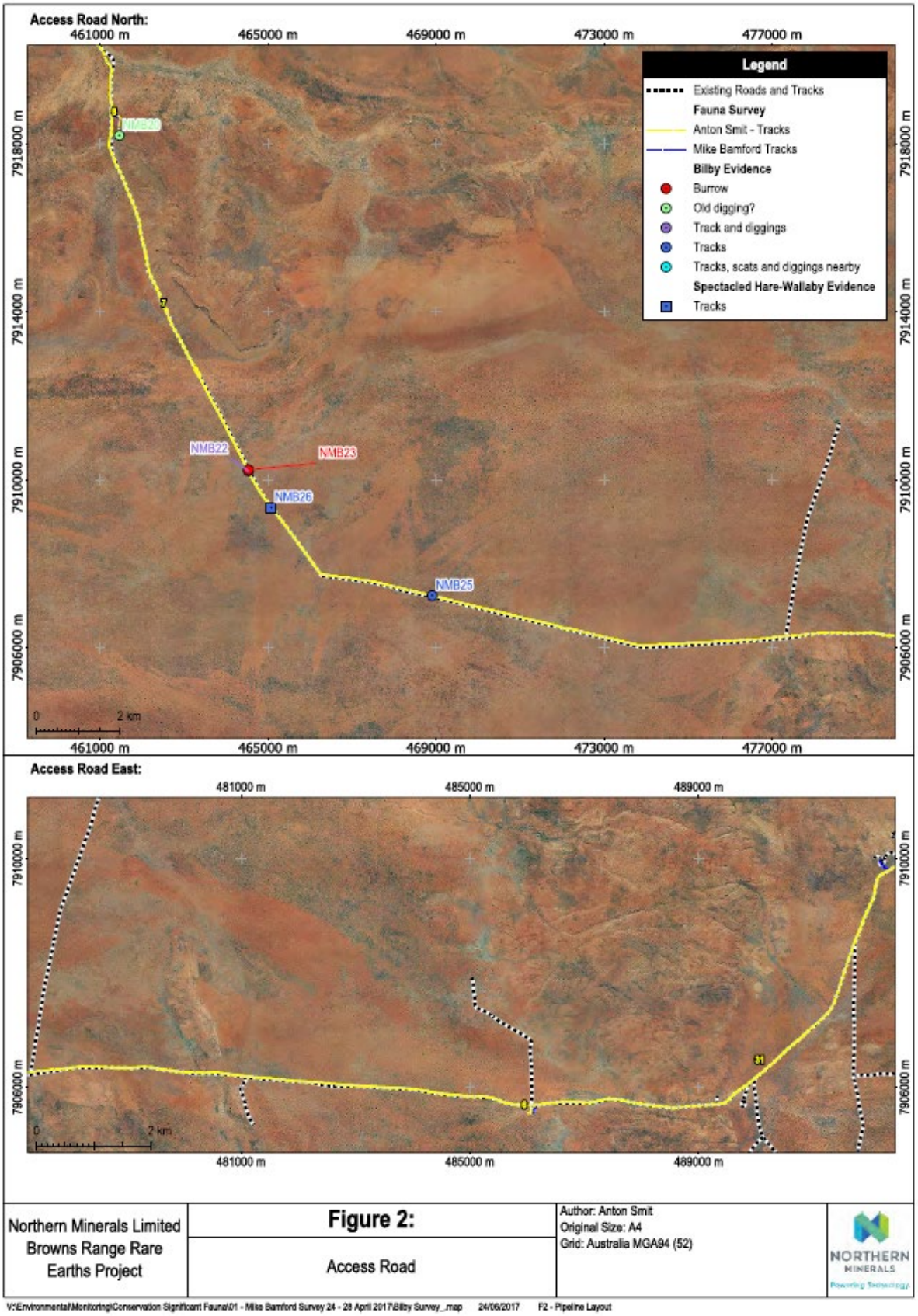

Figure 2. Search tracks and locations of significant fauna records along the access road.

Bilbies along entrance road
Tracks of Bilbies were found at two locations along the entrance road, with foraging holes (NMB22) and a burrow (NMB23; plate 2) nearby at one of these locations. The burrow was over 5m from the road so was clear from disturbance, and the Bilby had been foraging in an area recently disturbed by a grader, where the machine had pushed up loose soil at the base of a small tree. At the location where there was a track only (NMB25; plate 1), one animal had walked along the road for a distance of over 200m on the previous night. No burrows or foraging signs were found in this area, suggesting it was an animal 'in transit'.

The only other evidence of Bilbies along the entrance road was of some very old (several months) diggings around acacias in a proposed gravel pit (NMB20).

Bilbies along pipeline route
There was abundant evidence of Bilby activity along the pipeline route near the eastern end of the airstrip (see Figure 2). This area had been checked in February 2017 and no evidence had been found, but the evidence in April 2017 was abundant with fresh tracks, foraging holes, scat and five burrows. This indicates that the Bilby or Bilbies had moved in during the intervening period. All the burrows were located in the ridge of soil that had been pushed by a grader along the road probably several years before, with this mounded earth providing an ideal medium for burrow construction. There appeared to be two different sizes of footprints, suggesting at least two animals were present. All burrows were loosely blocked with clumps of dry grass on the nights of 26th and 27th May, and on the first night the grass had been completely removed from one burrow, suggesting an animal had moved in (or out). On the second night, none of the burrows was used. Two motion-sensitive cameras were set on both nights but failed to record Bilbies, although one recorded a *Pseudantechinus macdonnelensis* exiting a burrow. This did not remove the clump of grass. Despite this, there were fresh Bilby tracks each morning suggesting that the Bilby (or Bilbies) were using burrows away from the road for at least part of the time.

Spectacled Hare-Wallaby
A track of a small macropod that crossed the entrance road on the night of 27th April may have been evidence of a Spectacled Hare-Wallaby. The pes (foot length) was about 17-18cm which is about the right size for the species. This was an area of spinifex grassland that is typical of much of the region. The only other small macropod in the area is the Northern Nailtail Wallaby *Onychogalea unguifera* (although it was not listed in earlier fauna studies). The tracks could also have been produced by a small Euro, although an Euro of that size would almost certainly be accompanied by an adult and there was no evidence of this.

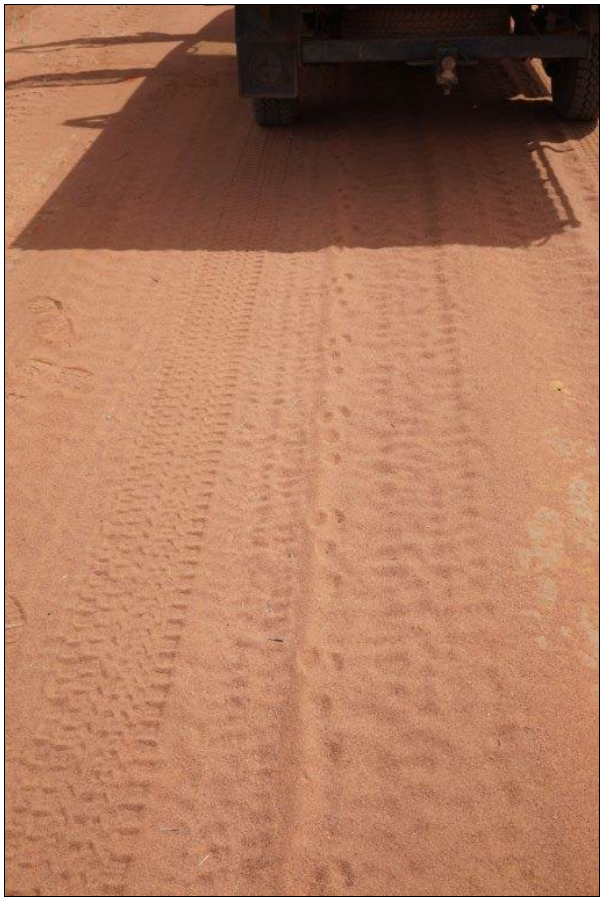

Plate 1. Bilby track along entrance road (NMB25).

Plate 2. Track of small macropod, possibly Spectacled Hare-Wallaby, on entrance road (NMB26)

Plate 3. Bilby burrow concealed under dense bush along entrance road (NMB23).

RECOMMENDATIONS

Works in known Bilby area along road between airstrip turnoff and mine/camp turnoff
The best option is to avoid Bilby burrows entirely, such as by shifting pipeline/road slightly to leave bund with burrows intact. All except one burrow were on the eastern side of the road. If burrows have to be disturbed, need to ensure they are not occupied at time (ie on the day) of earthworks. Grass used to block burrows can indicate that a burrow has not been used overnight; but if grass is pushed out of the way it only shows that a burrow has been used, not that it is occupied (or unoccupied). A camera placed on every burrow could help establish occupancy as may get a photo of the Bilby entering but not leaving. However, cameras can be a bit unreliable. The most likely scenario that may cause an issue is where there is one burrow that may/may not be occupied, and perhaps the best approach is to destroy all other burrows (known not to be occupied) and keep testing that possibly occupied burrow with a clump of grass and a camera (multiple cameras would be good) until it is certain that it is unoccupied.

Works along access road in relation to Bilbies
If outside of bund not being impacted, then survey work not required. Working the bund with the blade of the grader could loosely fill the entrance to a burrow in the side of the bund, but a bilby can readily dig itself out of that situation. Where road widening is necessary that may impact all of bund (ie crushing risk from weight of vehicle on bund), road should be walked looking for Bilby tracks. Where Bilby track found, bund should be checked for burrows for 500m either side of outermost evidence. Sandplain environment is the most likely to support Bilbies. Note that Bilbies can move into an area quickly and the current 28 day limit should be treated as a maximum as it is now clear that Bilbies are present in the general area. There is a crushing risk to Bilbies where the grader turns around and where it pushes earth off to the side, as on these occasions the wheels of the machine will breach the bund. Locations where this could occur need to be checked. If burrows are found in the bund along the access road, they need to be managed as outlined above for the Bilby area along the road between the airstrip and mine/camp turnoff.

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