FINAL REPORT

Tropicana Gold Project
Malleefowl and Mulgara Survey
Operational Area

Prepared for

TROPICANA JOINT VENTURE

AngloGold Ashanti Australia Limited

Independence Group NL

Level 13 St Martins Tower
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30 June 2009

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Executive Summary

This report has been prepared for AngloGold Ashanti Australia Limited (AngloGold) on behalf of the Tropicana Joint Venture (TJV) and describes a study designed to investigate the presence of the conservation significant Mulgara (*Dasycercus cristicauda and Dasycercus blythii*) and Malleefowl (*Leipoa ocellata*) within the Tropicana Gold Project Operational Area and surrounds (the Survey Area). The Survey Area is located approximately 330 km east northeast of Kalgoorlie, on the south western border of the Great Victoria Desert. Two surveys were conducted, between 22 and 29 April 2008, and between 6 and 12 August 2008.

The main objective of this study was to assist the TJV in determining whether Malleefowl and Mulgara are likely to occur within the Survey Area.

Secondary objectives of the study were to:

- Opportunistically collect information on the Southern Marsupial Mole (*Notoryctes typhlops*), and other prey species, through the collection of predator scats
- Record information on sightings or secondary evidence of threatened fauna species and any potentially suitable habitat observed
- Record information on introduced predator track density within the Survey Area.

Prior to the field surveys, URS conducted a desktop assessment of aerial photography of the Survey Area to identify:

- Potentially suitable Malleefowl habitat in which to conduct walking transect surveys. This habitat included eucalypt and/or mulga woodland with an understorey providing a reasonably high canopy cover.
- A route for the Malleefowl track surveys. The track survey routes were designed to traverse as much of the Survey Area as well as bisecting as much prospective Malleefowl habitat as possible, while traversing through a range of plant communities representative of the vegetation within the Survey Area
- Potentially suitable sites for Mulgara transect surveys. Sites were selected in those areas that looked to contain sizeable clumped grassland and shrubland habitats at a mature age structure and high canopy cover.

The above sites were assessed during site reconnaissance and additional sites for both the Mulgara and Malleefowl surveys were identified when the study team located suitable habitat (as described above). Additional sites were also selected based on interviews with AngloGold staff which identified locations where anecdotal evidence suggested possible animal presence.

Ten transects were conducted within habitat considered to be suitable for Malleefowl habitation and ten inactive Malleefowl mounds showing no signs of recent use (fresh scraping) were located. No Malleefowl tracks or other signs were recorded during the surveys. No Malleefowl tracks and three inactive Malleefowl mounds showing no signs of recent use (fresh scraping) were located during the track survey. This study confirms the historical presence of Malleefowl within the Survey Area. Given the survey intensity, URS believes that the lack of evidence of recent Malleefowl habitation suggests that no resident Malleefowl populations currently exist within the Survey Area. This may be due to several factors (and likely from a combination of these), including predation from introduced feral animals (e.g. foxes and cats), patchy habitat distribution and loss of favourable dense woodland habitat through fire.

URS conducted a total of 15 walking transects within the Survey Area within the most suitable habitat for Mulgara habitation. No direct recent or historical evidence of Mulgara was noted during the surveys, and no anecdotal evidence from AngloGold field staff suggest that this species exists within the Survey Area. Given the survey intensity of this study, URS believe that the absence of any evidence of Mulgara habitation suggests that it is unlikely that any resident Mulgara populations currently exist within the Survey Area.

Executive Summary

Introduced predators have been identified as posing both historical and current threats to Malleefowl and Mulgara populations. An average of 1.03 predator tracks/km were detected during the road surveys. The majority of these tracks were made by dogs (*Canis* sp. [n=123]), with their presence likely suppressing populations of smaller introduced predators, the feral cat (*Felis catus* [n=26]) and European Fox (*Vulpes vulpes* [n=9]).

Section 1 Introduction

1.1 Overview

This report has been prepared for AngloGold Ashanti Australia Limited (AngloGold) on behalf of the Tropicana Joint Venture (TJV) and describes a study designed to investigate the presence of the conservation significant Mulgara (*Dasycercus cristicauda* and *Dasycercus blythi*) and Malleefowl (*Leipoa ocellata*) within the proposed Tropicana Gold Project Operational Area and surrounds (the Survey Area [Figure 1-1]). The Survey Area is located approximately 330 km east northeast of Kalgoorlie, on the south western border of the Great Victoria Desert. Two surveys were conducted, a preliminary survey between 22 and 29 April 2008, and a follow-up survey between 6 and 12 August 2008.

The project is a joint venture between AngloGold Ashanti Australia Limited (70% and Manager) and the Independence Group NL.

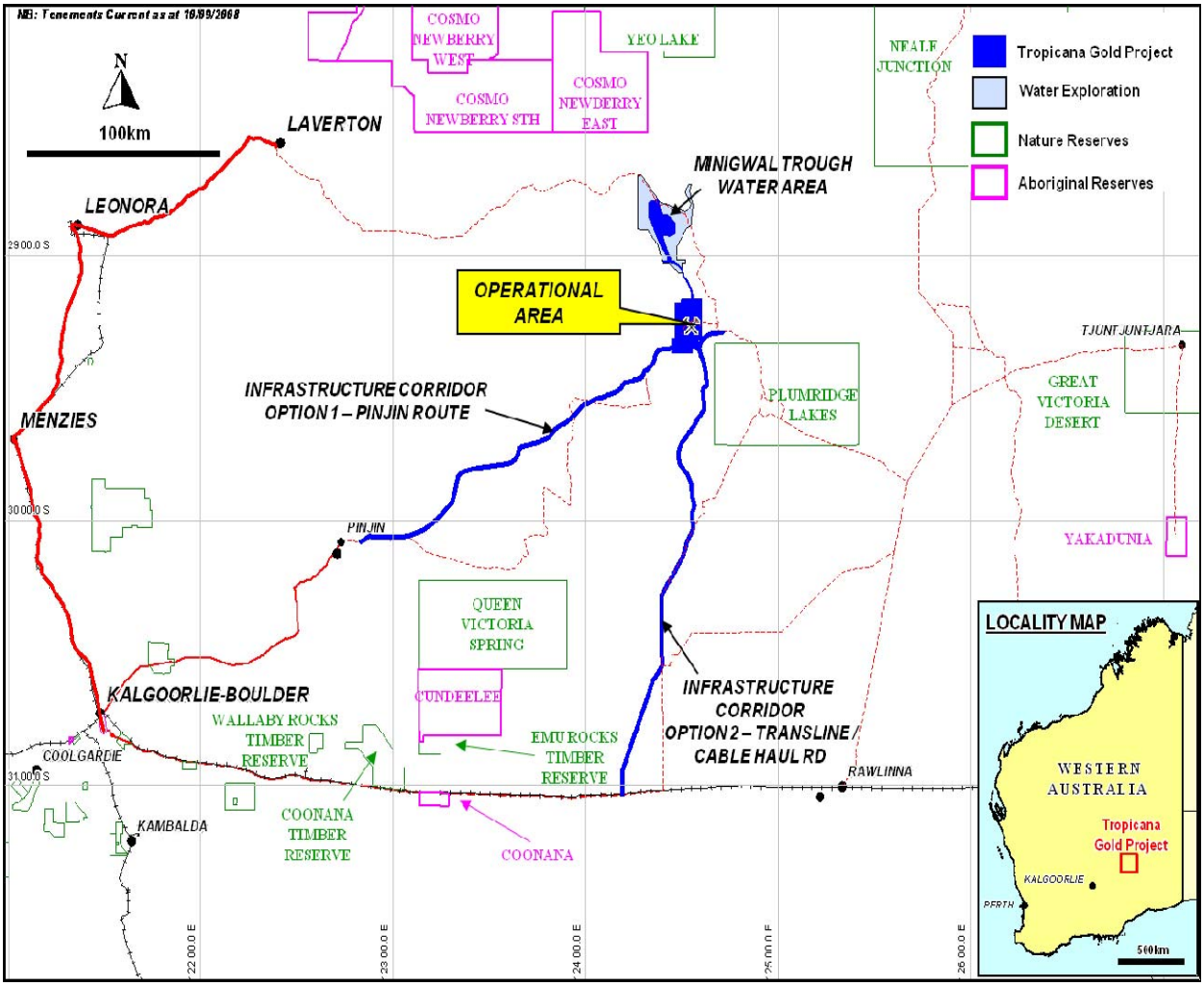

Figure 1-1 Tropicana Gold Project and the Malleefowl and Mulgara Survey Location

1.2 Objectives

The main objective of this study was to assist the TJV in determining whether Malleefowl and Mulgara are likely to occur within the Survey Area.

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Secondary objectives of the study were to:

- Opportunistically collect predator scats for AngloGold to utilise to gain further information on the Southern Marsupial Mole (*Notoryctes typhlops*) and other prey species
- Record information on sightings or secondary evidence of threatened fauna species and any potentially suitable habitat observed
- Record information on introduced predator track density within the Survey Area.

1.3 Background Information

1.3.1 Malleefowl

Description

The Malleefowl (Plate 1-1) belongs to the family Megapodiidae; the megapods or mound builders. The adult Malleefowl is a reclusive bird, about the size of a small turkey (550 mm to 610 mm), approximately 1.5 kg in weight, with a greyish head/neck, a black mark down the foreneck and upperparts composed of barred grey, black, white, buff and pale chestnut feathers (Pizzey and Knight, 1999).

Plate 1-1 The Malleefowl (*Leipoa ocellata*)
Source: http://www.malleefowl.com.au/

Distribution

Malleefowl were once common and widespread in the semi-arid zone of Australia, mainly occurring in mallee and *Acacia* scrublands, especially to the north and east of the mulga-eucalypt line. The species appears to be extinct in the western and northern goldfields and far south-west in Western Australia. Their remaining range (Figure 1-2) is highly fragmented. In Western Australia, Malleefowl occur in the Dryandra State Forest, Fitzgerald River National Park, Kalbarri National Park, and Cape Arid National Park, and have been reintroduced into the Francois Peron National Park. They have also been reported from many reserves within and around the Wheatbelt (Department of Environment and Conservation [DEC], 2008).

Habitat

Malleefowl are largely confined to arid and semi-arid woodland that is dominated by mallee eucalypts on sandy soils, with less than 430 mm of rainfall annually. They may also be found in mulga (*Acacia aneura*) and other sclerophyllous associations and in Western Australia have been known to occur in coastal heath where shrubs produce sufficient leaf litter for use in nest mounds (DEC, 2008).

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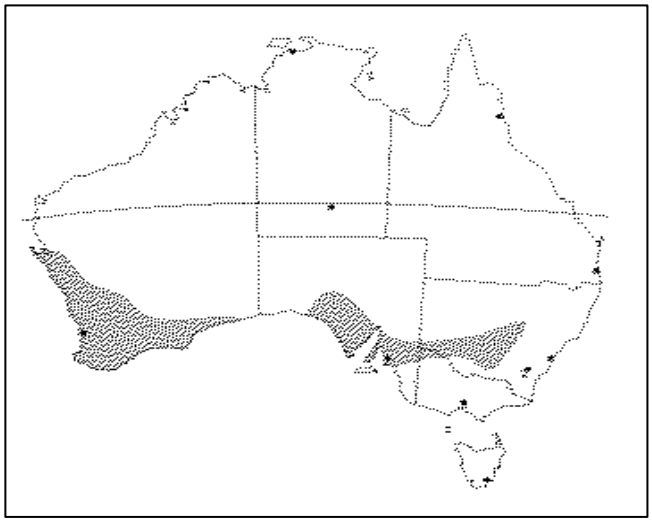

Figure 1-2 Distribution Map of Malleefowl
Source: www.environment.gov.au/cgi-bin/sprat/public/sprat.pl

Behaviour

Malleefowl build distinctive nests (Plate 1-2) that comprise a large mound of soil covering a central core of leaf litter. These nest mounds range in diameter but on average span more than five metres and may be up to one metre high. A Malleefowl pair will often use the same nest site each season rather than build a new one. Nest preparation occurs in autumn and the male will tend the nest through summer until temperatures begin to fall. The female helps with the nest initially but spends most of her time looking for food to meet the metabolic demands of egg production (DEC, 2008).

Plate 1-2 Malleefowl Nest
Source: http://www.malleefowl.com.au/

Section 1 Introduction

Malleefowl are generally monogamous and once breeding begins, a male and female will pair for life. Breeding Malleefowl tend to be sedentary, as they nest and roost in the same area year after year. While breeding, males do not stray far from the nest but at other times birds may range over several square kilometres. Home ranges do not appear to be defended, although in the vicinity of its nest the male is vigorously aggressive toward other Malleefowl except its mate. Radio tracking studies have shown that over the course of a year the birds may range over one to several square kilometres and that home-ranges overlap considerably. Malleefowl will usually find cover and remain motionless when threatened and will often rely solely on their camouflage to escape detection. The species will take to flight only as a last resort even though they are capable of strong flight (DEC, 2008).

Reproduction

Established pairs generally breed annually. Eggs are laid from September to January four to eight days apart. The average clutch size is 16 (the range is between five and 33). The decomposing organic matter with which the birds fill the nest incubates the eggs for between 62 and 64 days. About 80 per cent of all eggs hatch provided they are not saturated by rain or raided by foxes. Chicks hatch buried beneath soil up to one metre deep. Their struggle to the surface is unaided and may take up to 15 hours. Malleefowl chicks receive no parental care and within an hour of leaving the nest can run and feed independently. Mortality among chicks is high, with 80 per cent falling prey to predators such as feral cats and foxes, or dying from metabolic stress brought on by exposure or starvation, within about ten days. Malleefowl chicks are capable of dispersing quite widely after emerging from the nest but some have been reported to stay within the vicinity for up to 10 days. Malleefowl reach maturity at two, work a nest at three, and breed at four years of age. The lifespan of the Malleefowl is unknown but studies have not recorded an individual breeding beyond 12 years (DEC, 2008).

Diet

Malleefowl are opportunistic feeders and will eat whatever food sources are locally or seasonally abundant. They are omnivorous and their diet may include foliage, fruits, flower buds, tubers and seeds of a diverse range of plants as well as invertebrates, lerps, and fungi. Although it will drink if water is available, it normally survives without it (DEC, 2008).

Threats

Regional and national populations have been restricted by factors such as habitat clearing, increased fire frequency, competition with introduced herbivores including stock and exotic animals, and increased predation by feral animals such as foxes, cats and dogs. The Malleefowl is now listed as Vulnerable under the *Environmental Protection and Biodiversity Conservation Act* 1999 (EPBC Act) and Schedule 1 under the *Wildlife Conservation Act* 1950 (WC Act [Appendix A]).

1.3.2 Mulgara

Description

Mulgara is the common name given to two species from the genus Dasycercus: the Crest-tailed Mulgara (*Dasycercus cristicauda*) and the Brush-Tailed Mulgara (*Dasycercus blythi*) (Plate 1-3 and 1-4 respectively). The Brush-tailed Mulgara has also been previously classified as *Dasycercus hillieri* and commonly called Ampurta. However, the new classification as *D. blythi* has been used in this report for consistency. We include descriptions of both species in this report as there is some conjecture as to whether one, or both species, may have a distribution that includes the survey area.

Both species are small marsupials with a body length ranging from 120 mm to 220 mm, and a tail length of 75 mm to 130 mm. Head and body descriptions are similar for both species with sandy coloured fur on the back and upper parts with a pale grey belly. The tail is sandy in colour, with bushy black fur extending from approximately half way to the tip. However, the Crest-tailed Mulgara has a distinctive dorsal crest on the tip of its tail (Plate 1-5), while no tail crest is evident on the Brush-Tail Mulgara (Plate 1-6). Further

Section 1 Introduction

distinguishing characteristics between the two species include two upper pre-molar teeth in *D. blythi* compared to three in *D. cristicauda*, and six teats in female *D.blythi* compared to eight in *D. cristicauda* (Woolley 2005; 2006).

Plate 1-3 The Crest-tailed Mulgara (*Dasycercus cristicauda)*
Source: Northern Territory Government, 2008

Plate 1-4 The Brush-tailed Mulgara (*Dasycercus blythi)*
Source: Northern Territory Government, 2008

Plate 1-5 Tail of *Dasycercus cristicauda*
Source: Woolley, 2005

Plate 1-6 Tail of *Dasycercus blythi*
Source: Woolley, 2005

Distribution

Potential overlap may occur in the distribution of these two Mulgara species with both species inhabiting arid, sandy regions of central Australia and Western Australia (Figure 1-3). Past distribution is believed to be widespread, however, the Mulgara has declined in population in the south and east of its range (Menkhorst and Knight, 2004) and now has a more restricted and fragmented distribution (Northern Territory Government, 2008a).

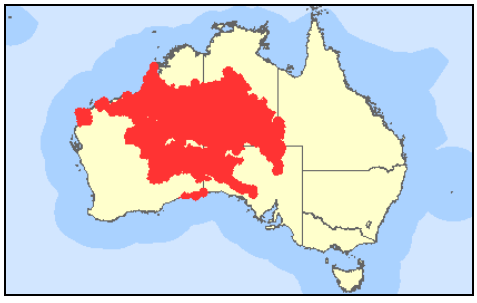

Figure 1-3 Distribution Map of the Mulgara
Note: This map includes records from both *D. cristicauda* and *D. blythi*.
Source: http://www.environment.gov.au/cgibin/sprat/public/publicspecies.pl?taxon_id=328)

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Habitat

Mulgara predominantly occur in hummock grasslands (e.g. *Triodia* spp.) and shrublands on sandy soils (Menkhorst & Knight, 2001). Mulgara burrow in the flat areas between sand dunes or on the low sides of sand dunes (Northern Territory Government, 2008a; 2008b). Burrows vary geographically in shape and size. In the Pilbara region of Western Australia, burrows have been observed with between two and nine entrances, tunnels mostly on a single level and to a depth of about 300 mm, shaped typically as an arch over a flat bottom with a height of 70-80 mm and width of 80-100 mm at the base. Internal tunnels are mostly 50-70 mm wide leading to grass lined nests. Both males and females use two to nine burrows but average about three. Burrows are confined to a small area as home ranges may only be approximately 440 m^2 (Thompson and Thompson, 2007).

Behaviour and Reproduction

Mulgara are predominantly nocturnal, emerging from their burrows at night to feed (Northern Territory Government, 2008a; 2008b). Burrows are typically occupied by one individual. Breeding season occurs during the winter months and it is believed that gestation lasts for at least one month. A single littler can produce up to eight young (australianfauna.com, accessed November 2007).

Diet

Mulgara are carnivorous, feeding mainly on small rodents, insects and small reptiles (australianfauna.com, accessed November 2007).

Threats

Listed under its previous classification of *D. hillieri*, the Brush-tailed Mulgara appears as Endangered under the EPBC Act and as a Schedule 1 species under the WC Act. The Crest-tailed Mulgara (*D. cristicauda)* is listed as Vulnerable under the EPBC Act and Schedule 1 under the WC Act (Appendix A). It has been suggested that these species can tolerate a moderate local reduction in land cover; a more severe reduction however, could lead to population decline. However, Thompson and Thompson (2007) found active burrows in a recently burnt area with little vegetation. Predation by introduced species such as cats and foxes, and habitat reduction from anthropogenic activities such as agriculture, forestry, and mining are the main threats to these species.

1.4 Study Team

The surveys described in this report were planned, coordinated and executed by:

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Staff members:

- Blair Hardman: Master of Science (Environmental Management) on Endangered Marsupials. Approximately ten years' experience conducting biological surveys in Australia and overseas
- Jared Leigh: Bachelor of Science (Environmental) Zoology/Marine Biology. Approximately eight years' experience conducting biological surveys in Australia and overseas.

URS wishes to acknowledge Belinda Bastow and the AngloGold Field staff for their invaluable assistance during the desktop assessment and field survey components of this study.

Section 2 Methodology

2.1 Survey Site Selection

Prior to the field surveys, URS conducted a desktop assessment of aerial photography of the Survey Area to identify:

- Potentially suitable Malleefowl habitat in which to conduct walking transect surveys. This habitat included eucalypt and/or mulga woodland with an understorey providing a reasonably high canopy cover.
- A route for the Malleefowl track surveys. The track survey routes were designed to traverse as much of the Survey Area as well as bisecting as much prospective Malleefowl habitat as possible, while traversing through a range of plant communities representative of the vegetation within the Survey Area
- Potentially suitable Mulgara habitat in which to conduct walking transect surveys. Sites were selected in those areas that looked to contain sizeable clumped grassland and shrubland habitats at a mature age structure and high canopy cover.

The sites and route were ground-truthed and additional survey sites for both Mulgara and Malleefowl transects were selected during site reconnaissance when the study team located suitable habitat, and when interviews with AngloGold staff identified locations where anecdotal evidence suggested possible animal presence. Some of these additional sites were not assessed as they were located outside of the Survey Area, but the sites were recorded for potential future reference. In areas that were deemed to contain sub-optimal habitat or habitat unlikely to be suitable for either Mulgara or Malleefowl, no walking transects were conducted. Figure 2-1 presents the locations of the survey sites within the Survey Area.

2.2 Data Collection

2.2.1 Overview

Two URS Environmental Scientists conducted the field components of the Malleefowl and Mulgara surveys during 22-29 April and 6-12 August 2008. URS staff were assisted when required by AngloGold field staff. The surveys were conducted in accordance with Guidance Statement No. 56 *Terrestrial Fauna Surveys for Environmental Impact Assessment in Western Australia* (Environmental Protection Authority, 2004).

All coordinates in this report are in WGS 84 datum (Map zone 51).

2.2.2 Malleefowl Survey

Overview

URS conducted a baseline presence assessment of Malleefowl using survey methodology consistent with the Western Australian DEC requirements and Malleefowl survey protocol (Natural Heritage Trust, 2007). These methods were discussed and designed in consultation with the DEC. Two methods were used, a survey utilising the track system that traversed the Survey Area, and a walking transect survey.

Track Surveys

The preliminary track survey routes were identified during the desktop assessment. However, some of the routes altered slightly while in the field as some of the roads were not suitable for the survey due to issues including:

- Regular vehicle use by the drilling company onsite
- A high density of vegetation in the centre of the road

Section 2 Methodology

- Drill holes and associated marking pegs in centre of the road.

The final road survey routes are presented in Figure 2-1. Road surveys were conducted over four separate sections (Routes 1-4), with each section surveyed over a three day period. The survey route covered a total length of 50.6 km.

Section 2 Methodology

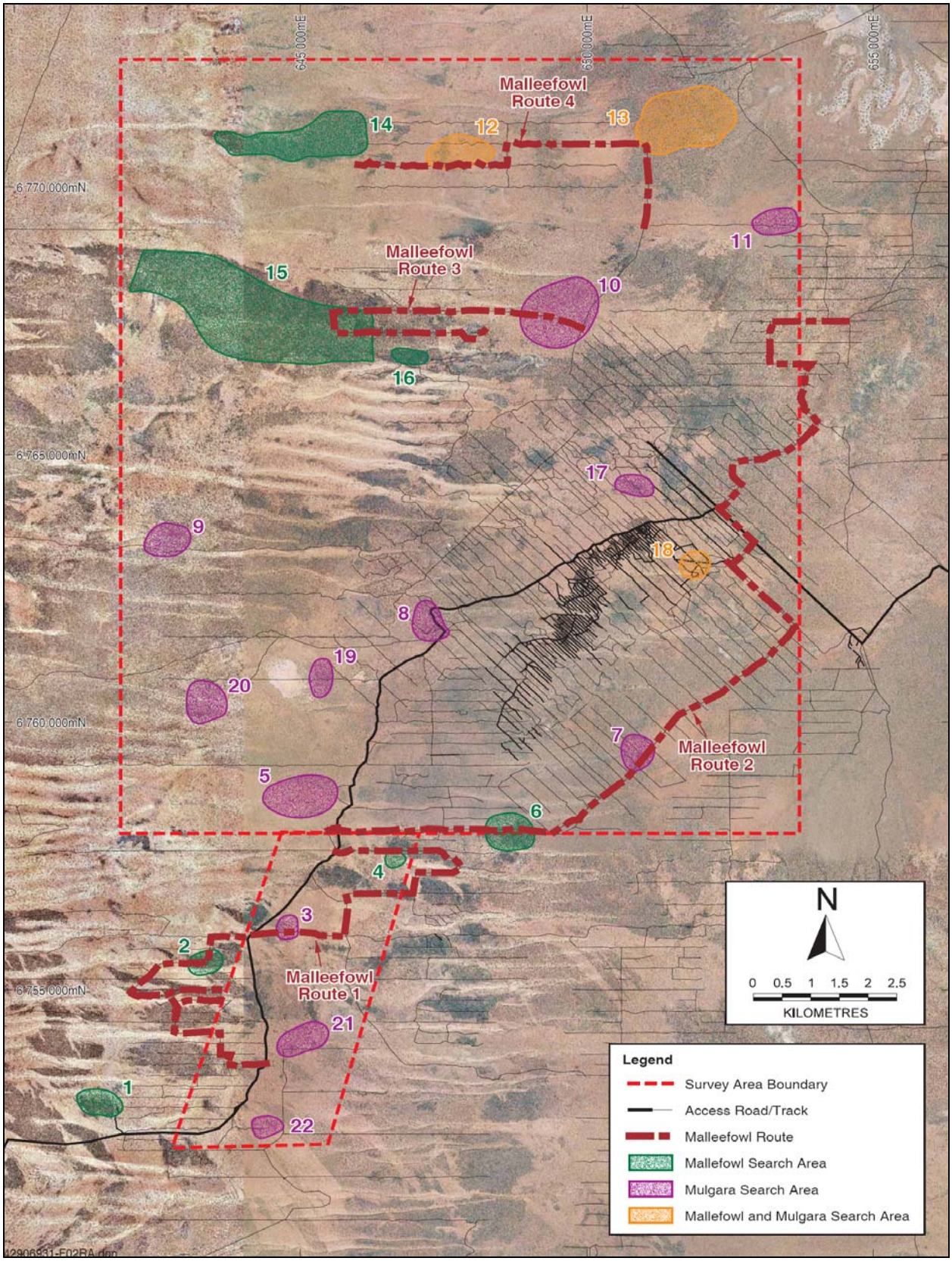

Figure 2-1 Road Survey Routes and Walking Transect Sites

Section 2 Methodology

Once the final road alignments had been determined, the URS field team 'cleared' the designated roads of fauna tracks using a tyre grader dragged behind a 4WD vehicle (Plate 2-1). The clearing removed most previous signs of animal (foot/paw prints) and vehicle tracks from the road. During the initial clearing, the location of any Malleefowl sign or other interesting tracks were recorded using a GPS. In the following three mornings, the URS field team traversed the same roads to identify any tracks (including introduced predator) that had been made on the road since the previous road clearing. Vehicle speed varied between 10 and 20 km/h depending on the ease of track identification, time of day and track suitability. Once a track had been recorded, all tracks for the next 200 m made by the same species were ignored before the visual identification survey process began again. This methodology is not designed to provide a population assessment, but is used to assess presence/absence, and can also provide a track index which can potentially be used to determine changes in track abundance when compared against results of future surveys.

Plate 2-1 "Clearing" Road Route with Tyre Grader

Walking Transects

Transects were conducted by URS field staff at ten sites that appeared to provide appropriate habitat for Malleefowl survival. These sites were predominantly within woodland that was dominated by mulga and/or eucalypt, and contained understorey vegetation that was deemed to be dense enough to provide potential habitat for nesting purposes. These surveys were designed to assess Malleefowl presence, through observations of individuals, nesting sites, tracks or other secondary evidence. Any evidence of other threatened species was also recorded. Transects were generally conducted by two to four people for periods of one to five hours, and covered a corridor of 40-100 m around the extremity of the search areas (see Figure 2-1).

Section 2 Methodology

2.2.3 Mulgara Survey

As with the Malleefowl surveys, Mulgara surveys were conducted to assess animal presence. Mulgara search areas identified during the desktop assessment were ground truthed for suitability (based on size, density and maturity of hummock grass and shrubland), and the remainder of the accessible Survey Area was investigated for other suitable sites. Areas not surveyed on foot, including the proposed Tropicana operation footprint, were assessed and deemed to contain sub-optimal Mulgara habitat or habitat unsuitable for Mulgara, with searches concentrating on the most suitable habitat. In general, habitat was deemed to be unsuitable because it did not contain hummock grasslands (e.g. *Triodia* spp.) or shrublands that supplied suitable density or structure for mulgara refugia. Sites deemed to provide suitable habitat were surveyed on foot by searching for secondary evidence of Mulgara (burrows, digging, scats, tracks). Searches concentrated on areas around the base of clumps of mature grasses (e.g. spinifex) and shrubs. As discussed, distribution of the two Mulgara species overlaps and there is currently no survey method capable of distinguishing between the two species without trapping and identifying individuals. As both species occur in similar habitat with similar ecology, either could be encountered during surveys.

Walking transects were conducted by URS and AngloGold field staff at 15 sites (Figure 2-1) that appeared to provide the most appropriate habitat for Mulgara. Transects were conducted for periods of one to five hours, and covered a corridor of approximately 40-100 m around the extremity of the search areas. This methodology for this species was agreed in consultation with the DEC (D. Pearson, Jan 08) and is believed to provide a more accurate assessment of presence/absence than trapping, and a more efficient use of survey time.

During the Mulgara surveys, any evidence of Malleefowl (tracks, mounds, feathers) or other threatened species were also recorded.

2.2.4 Other

Predator Scats

Introduced predator scats were opportunistically collected during the surveys. URS understands that these scats may be DNA-tested by the TJV at a later stage for the presence of Marsupial Moles or other threatened species. Scats collected were bagged, labelled and locations recorded by GPS. These scats were submitted to management staff at the Tropicana Exploration Camp.

Threatened Fauna

The URS field team also opportunistically collected information on threatened fauna species and potentially suitable habitat observed in the Survey Area. Generally, the sign of species presence, potentially suitable habitat location and any other relevant information was recorded.

Section 3 Results

3.1 Malleefowl

No Malleefowl tracks were recorded during the road surveys. Three Malleefowl mounds were located during the road survey, though none of the mounds were active or showed signs of recent use (Table 3-1, Figure 3-1, Malleefowl Mounds 4 – 6).

Ten transects were conducted within habitat considered to be suitable for Malleefowl survival. Ten Malleefowl mounds were located (Table 3-1, Figure 3-1), though none of the mounds were active or showed signs of recent use (e.g. Plate 3-1). No Malleefowl tracks or other signs were recorded during the surveys.

Table 3-1 Malleefowl Mound Locations

Malleefowl Mound Number	GPS Location		Overstorey Vegetation
	Easting	Northing	
1	647xxx	6770xxx	*Acacia*
2	648xxx	6757xxx	*Acacia*
3	648xxx	6757xxx	*Acacia*
4	642xxx	6755xxx	Burnt (ex-*Acacia*)
5	643xxx	6754xxx	Burnt (ex-*Acacia*)
6	643xxx	6754xxx	Burnt (ex-*Acacia*)
7	646xxx	6767xxx	*Acacia*
8	646xxx	6766xxx	*Acacia*
9	645xxx	6767xxx	*Acacia*
10	643xxx	6768xxx	*Acacia*
11	642xxx	6768xxx	*Acacia*
12	6433xxx	6768xxx	*Acacia*
13	646xxx	6767xxx	*Acacia*

Anecdotal evidence from AngloGold environmental staff suggested the presence of Malleefowl tracks within an area west of the Survey Area (Malleefowl Search Area 1, Figure 2-1). URS conducted a transect through the identified area but found no sign of historical or current Malleefowl habitation. Further anecdotal evidence by AngloGold staff of a Malleefowl sighting in the south of the survey was provided, but this location was too far outside the Survey Area to be included in this study.

3.2 Mulgara

The Survey Area contained significant amounts of hummock grasslands that were considered to be the most suitable Mulgara habitat within the Survey Area. However, the habitat was mostly patchy and the percentage ground cover and maturity of the habitat was highly variable (see Plate 3-2). URS conducted 15 transects within the most suitable Mulgara habitat, but no Mulgara burrows or other signs of recent presence were identified.

Section 3 Results

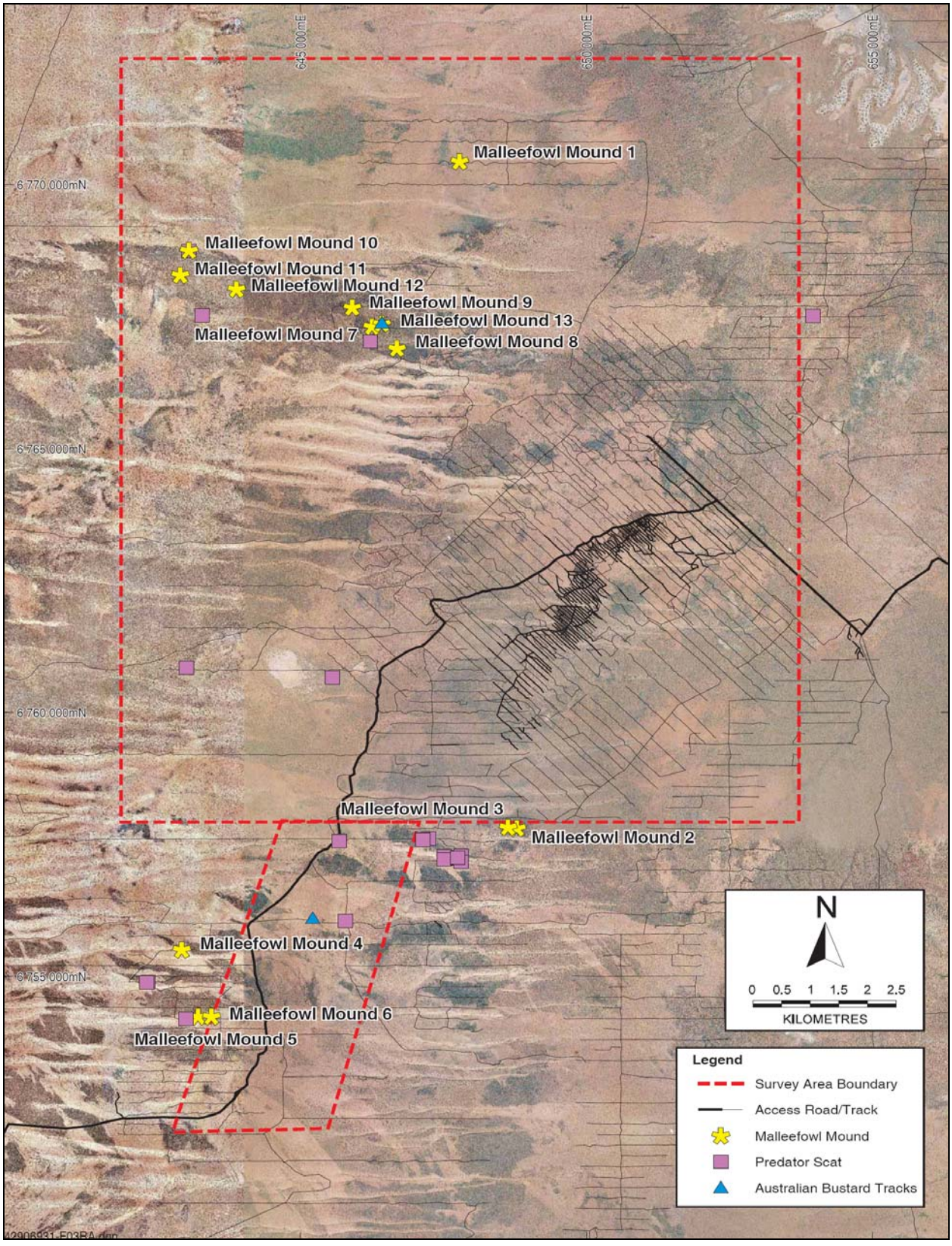

Figure 3-1 Malleefowl Nest and Predator Scat Locations

Section 3 Results

Plate 3-1 Malleefowl Mounds: Unburnt (left) Compared to Burnt (right) Habitat

Plate 3-2 Potential Mulgara Habitat: Search Area 8 (left) and Search Area 11 (right)

3.3 Threatened Species

The URS field team recorded one DEC listed Priority 4 bird species within the Survey Area, the Australian Bustard (*Ardeotis australis*). Australian Bustard tracks were located at:

- 645214 mE 6756073 mN
- 646423 mE 6767356 mN.

3.4 Predator Density Index

A total of 158 predator tracks were logged during the Malleefowl road surveys. The average predator density index over the duration of the road survey was 1.03 tracks/km. This index is detailed further in Table 3-2.

Section 3 Results

Table 3-2 Predator Density Index

Factor	Index (tracks/km)
Average Predator Density Index	1.03
Average Predator Density Index Route 1	0.72
Average Predator Density Index Route 2	1.68
Average Predator Density Index Route 3	0.61
Average Predator Density Index Route 4	0.32
Average Cat Density Index	0.18
Average Fox Density Index	0.06
Average Dog Density Index	0.80

3.5 Predator Scats

A total of 22 introduced predator scat samples were collected, labelled and provided to AngloGold Tropicana staff for use in Marsupial Mole studies.

Section 4 Discussion

4.1 Malleefowl

This study confirms the historical presence of Malleefowl within the Survey Area. A total of 13 inactive and recently unused mounds were located. Mounds were predominantly located in woodlands of *Acacia* with a dense understorey. In all cases, the most recent mound activity was likely to have occurred at least five years, and in most cases significantly longer, prior to the field survey.

URS conducted surveys for Malleefowl:

- Using two different survey methods
- In all woodland habitats within the Survey Area that were likely to sustain a Malleefowl population
- In a high density throughout the Survey Area.

Given this survey intensity, URS believes that the lack of evidence of recent Malleefowl inhabitation suggests that no resident Malleefowl populations currently exist within the Survey Area. This may be due to several factors, and most likely a combination of these factors, including predation by introduced feral animals (e.g. foxes and cats), patchily distributed favourable habitat and loss of this favourable dense woodland habitat through fire.

4.2 Mulgara

The dominant understorey vegetation structure throughout the Survey Area is hummock grasslands of *Triodia* spp. URS searched a total of 15 of the most suitable Mulgara habitat areas throughout the Survey Area. These areas contained clumped grass and shrublands that were at a suitable age structure and cover for Mulgara habitation. Areas within the Survey Area not searched, including what we understand to be the operational area footprint, were assessed for Mulgara habitation suitability, and it was determined that these areas were not as likely to support populations of Mulgara as the searched areas due to either:

- The vegetation structure (e.g. low canopy cover woodland with minimal understorey density)
- The maturity and size of the *Triodia* hummocks
- The low percentage cover provided by the *Triodia* hummocks
- The soil substrate

No direct recent or historical evidence of Mulgara was noted during the surveys, and no anecdotal evidence from AngloGold field staff to suggest the recent presence of this species within the Survey Area. URS note that all potentially suitable Mulgara habitat within the Survey Area was not surveyed. However, given the survey intensity of this study, URS believe that the lack of any evidence of Mulgara habitation suggests that it is unlikely that any resident Mulgara populations currently exist within the Survey Area. URS also note that it is also unlikely that populations of Mulgara will colonise the Tropicana Operational footprint due to it containing sub-optimal mulgara habitat and the disturbance created by the exploration activities taking place.

Introduced mammalian predators have been identified as posing both historical and current threats to Malleefowl and Mulgara populations. An average of 1.03 predator tracks/km were detected during the road survey. The majority of these tracks were made by dogs (*Canis* sp. [n=123]), with their presence likely suppressing larger populations of smaller introduced predators, the feral cat (*Felis catus* [n=26]) and the European Fox (*Vulpes vulpes,* [n=9]).

Section 4 Discussion

4.3 Limitations

Limitations to the study include:

- The average predator index, obtained from the number of predator tracks observed during the Malleefowl road survey, does not provide a regional comparison for predator numbers. The index is designed to provide an indication of changes in predator numbers at a specific site over time. The average predator index will not give a reliable regional comparative result as aspects such as habitat type, seasonality and normal fluctuations in animal populations will bias the index.
- These surveys were conducted over two seasons. It is possible, but believed unlikely, that the study species utilise habitat within the Survey Area during the unsurveyed seasons.
- The entire Survey Area was not searched on foot, however, given:
  - the number of searches conducted for both Mulgara and Malleefowl
  - that the searches were conducted in the most suitable habitat
  - areas not searched on foot were assessed for suitability and deemed to be sub-optimal habitat and unlikely to support populations of Mulgara or Malleefowl.

4.4 Conclusion and Recommendations

Given this study was conducted in accordance with recommended DEC methodologies and at a high intensity throughout the Survey Area, URS concludes that it is unlikely that resident populations of either Mulgara or Malleefowl currently inhabit the Survey Area (which includes the operational area footprint). URS believes that no additional broad scale field surveys are required to determine the presence of Malleefowl and Mulgara within the Survey Area.

We note that it is possible that populations of Mulgara could colonise areas within the Survey Area between the time of the surveys and the time of future disturbance related to mining activities. However, it is deemed unlikely that populations of Mulgara will colonise the Tropicana operational footprint given the amount of exploration activities being conducted and the unsuitability of the habitat compared to other more suitable habitat in relatively close proximity. Should the operational footprint alter in location, we recommend that the new location/s be reviewed for the presence of suitable Mulgara habitat. Should this new area contain habitat potentially suitable for Mulgara inhabitation, we recommend that targeted surveys for Mulgara be undertaken within these immediately prior to significant land disturbance activities associated with mining and/or infrastructure construction. This pre-disturbance check should involve a similar methodology to the Mulgara walking transects conducted in this study and recommended by the DEC, but should be conducted within the operational area footprint and an approximate 50 m buffer. Should Mulgara be located, we recommend that they be trapped and relocated to a similar habitat in the local area, but away from any potential human disturbance.

URS also recommends that consideration should be given to implementing a predator control programme following appropriate consultation with the relevant regulators and stakeholders. This programme should be considered in the wider regional context to maximise effectiveness.

Section 5 References

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Section 6 Limitations

URS Australia Pty Ltd (URS) has prepared this report in accordance with the usual care and thoroughness of the consulting profession for the use of AngloGold and only those third parties who have been authorised in writing by URS to rely on the report. It is based on generally accepted practices and standards at the time it was prepared. No other warranty, expressed or implied, is made as to the professional advice included in this report. It is prepared in accordance with the scope of work and for the purpose outlined in the Proposals dated 27 February 2008 and 11 July 2008.

The methodology adopted and sources of information used by URS are outlined in this report. URS has made no independent verification of this information beyond the agreed scope of works and URS assumes no responsibility for any inaccuracies or omissions. No indications were found during our investigations that information contained in this report as provided to URS was false.

This report was prepared between May 2008 and June 2009 and is based on the conditions encountered and information reviewed at the time of preparation. URS disclaims responsibility for any changes that may have occurred after this time.

This report should be read in full. No responsibility is accepted for use of any part of this report in any other context or for any other purpose or by third parties. This report does not purport to give legal advice. Legal advice can only be given by qualified legal practitioners.

Appendix A Conservation Legislation

Commonwealth Legislation

An official list of endangered, vulnerable and presumed extinct fauna species was prepared (Schedule 1), and is regularly updated, following Australia signing the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) in 1974. This list originally accompanied the *Endangered Species Protection Act* 1992, which in July 2000 was replaced by the *Environment Protection and Biodiversity Conservation Act* 1999 (EPBC Act).

The vertebrate fauna on the current Schedule are categorised as:

- Extinct
- Extinct in the wild
- Critically endangered
- Endangered
- Vulnerable
- Conservation dependant.

State Legislation

Protected Species

The *Wildlife Conservation Act* 1950 (WC Act) is Western Australia's legislation to protect rare or endangered fauna species. In 2006, the list of conservation significant species was reviewed and the Wildlife Conservation (Specially Protected Fauna) Notice 2006 (2) was published. The Schedules defined under this legislation comprise:

- Schedule 1 - fauna that is rare or is likely to become extinct
- Schedule 2 - fauna presumed to be extinct
- Schedule 3 - birds protected under an international agreement such as the Japan-Australian Migratory Bird Agreement (JAMBA) or the China-Australia Migratory Bird Agreement (CAMBA)
- Schedule 4 - other specially protected fauna.

Priority Species

The Western Australian Department of Environment and Conservation (DEC) maintains a State list of conservation significant Priority Fauna, which classifies species as:

- Priority 1 - taxa with few, poorly known populations on threatened lands
- Priority 2 - taxa with few, poorly known populations on conservation lands
- Priority 3 - taxa with several, poorly known populations, some on conservation lands
- Priority 4 - taxa in need of monitoring for which sufficient knowledge is available and which are considered not currently threatened or in need of special protection

Priority 5 - taxa in need of monitoring which are not considered threatened but are subject to a specific conservation programme.