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NEWMONT BODDINGTON GOLD

TERRESTRIAL FAUNA MANAGEMENT PLAN

DECEMBER 2014

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1. EXECUTIVE SUMMARY

Newmont Boddington Gold (NBG) is located in the Jarrah Forest Biogeographic and Northern Jarrah Forest sub region which is home to numerous fauna species protected under both State and Federal Legislation. As a result the base rock operation presents a number of risks to these flora and fauna key species that are managed through an Environmental Management System. The potential operational impacts on terrestrial fauna was most recently considered within State and Federal approval documentation tied to the Life of Mine Extension Project which has resulted in additional conditions centered around the development of a new Terrestrial Fauna Management Plan.

This Terrestrial Fauna Management Plan includes but is not limited to:

- legal obligations;
- historical studies;
- expected outcomes;
- ongoing studies and reviews

The management plan will compliment and build on existing fauna management plans that have been in operation since the recommencement of the mine in 2006.

Whilst the management of all Terrestrial Fauna is captured within this plan, a particular focus is placed on those species identified as being of significance within State and Federal legislation such as the Woylie (*Bettongia penicillate ogilbyi*) and the Chuditch (*Dasyurus geoffroii).* This plan does not seek to address the three Black Cockatoo species which inhabit the project area as their management is outlined in a separate dedicated document.

2. PURPOSE

This document prescribes Newmont Boddington Gold Pty Ltd's (NBGPL) internal and external commitment to avoid, minimise and offset potential impacts to terrestrial fauna found to be influenced by the mining operation. This Plan is integral to NBGPL's corporate mandate to operate in a sustainable manner through execution of an environmental management strategy across site.

This plan also seeks to specifically address Condition 12 from EPBC 2012/6370 LOM Extension Project approval (dated 16 May 2014) which requires a Terrestrial Fauna Management Plan (BCMP) be submitted for approval by the Minister.

3. SCOPE

As noted above whilst outlining actions to manage impacts to all terrestrial fauna, this Management plan applies a particular focus on Woylie and Chuditch which are listed species under the Federal *EPBC Act, 1999*. Generally, the management actions which support these two species will have benefit on all species of terrestrial fauna within the region.

The NBG mine is located approximately 120 km south-east of Perth and 12 km to the north-west of the town of Boddington (Figures 1 and 2). The spatial extent of the Plan is designed to include all land owned or operated upon by NBG, which consists of:

- areas currently under operation for the purpose of mining;
- areas likely to be affected by mining operations through the course of executing the mine plan;

- areas distributed through tenements that will not be directly impacted through mining operations; and
- peripheral areas outside the mine that include but not limited to Hotham Farm, Saddleback Treefarms and potential offset locations.

The scope of this management plan includes both the operational and closure phase where the goal will be to undertake reclamation to produce a post-mining habitat capable of sustaining terrestrial fauna populations of those species known to occur within the region.

As NBG maintains a detailed stand-alone *Black Cockatoo Management Plan*, specific information regarding the management of Carnaby's, Baudins and Forest Red Tailed Black Cockatoos is not included within this plan. Where applicable general references to the Black Cockatoo Management Plan are included within the document.

As a minimum this document must refer to specific strategies and controls for the Management of species listed under State or Federal Legislation requiring protection (with a particular focus on Woylie and Chuditch).

4. OBJECTIVES

The objective of this plan is to provide a clear and measurable program for managing the impacts that Newmont Boddington Gold may have on the Management of Terrestrial Fauna, with a particular focus on Woylie and Chuditch. Those management objectives are outlined within Table 1 below.

Table 1: Management Objectives for Terrestrial Fauna at NBG

Management Objective	Target	Performance Indicator
Retention of Logs, Rocks and Potential Wildlife Habitats for use in Rehabilitation	Minimum of 1 wildlife habitat per hectare (ha) of rehabilitation	Recording of wildlife habitats during rehabilitation process
Identification of Woylie and Chuditch on site	Education of workforce through inductions, Environmental Bulletins, Notice Boards and Standard Operating Procedures	Notification of Woylies and Chuditch reported through Cintellate and/or annual compliance reports
Reporting of Woylie and Chuditch Species	100% of significant fauna species are reported to onsite SER department	
Fragmentation management/Maintaining corridors	No clearing of vegetation between plant and RDA acting as an East/West vegetation corridor	Presence of actively used corridors
Protect identified significant habitats	No clearing outside approved boundaries	Monitoring of disturbance activities via the site disturbance process Annual reconciliation of

Management Objective	Target	Performance Indicator
		clearing and reporting via the Annual Environmental Report (AER)
Minimise the number of fauna deaths during clearing	Implementation of a phased clearing approach to the Life of Mine Extension clearing requirements Completion of fauna trapping and relocation prior to clearing activities	Annual review and reconciliation reported through the AER. Fauna trapping and relocation reporting
Minimise the number of vehicle related fauna mortalities and injuries	No deliberate loss of native fauna from site personnel Adherence to site speed limits Restricted access of personnel to forested areas	Incident reporting Site Speed Camera Monitoring
Minimise the number of fauna mortalities and injuries related to infrastructure	Installation of egress structures into containment ponds and appropriate fencing on electrical installations Maintain fresh water points around RDA	Incident reporting Inspection of sumps and processing ponds
Identification of high value species via non-contact methods prior to fauna trapping programs	Identification of high value fauna species. No losses of high value species during fauna trapping programs	Fauna trapping and relocation reporting
Minimise the effect of feral animals on native terrestrial fauna	No measurable increase in feral animal abundance within the project area as a result of mining activities	Number of feral animals recorded during trapping exercises Engagement with NGOs involved in feral animal control

5. INTRODUCTION

Fauna surveys and monitoring have been conducted in the Boddington mine area since the early 1980s, including a baseline study in 2001/02 (Ninox 2003), Figure 3. A Level 1 desktop fauna assessment has also been undertaken in the vicinity of the current RDA area (Biota 2003). The area has been assessed for Black- Cockatoo habitat and a detailed habitat assessment of the land subject to the interim project has also been undertaken. Desktop assessments have been completed for short-range endemic (SRE) invertebrates (Outback Ecology 2011, 2012a) and subterranean fauna (Outback Ecology 2012b). Additional fauna surveys have been completed over 2011 and 2012 for terrestrial fauna (Ninox 2012a, 2012b), aquatic fauna and SRE invertebrates.

Fauna surveys have identified a total of 14 native mammal species, 22 reptile species, 14 frog species, and 91 species of native birds. Most of the species in relevant surveys were common to the 1980s and 2001/02 surveys; some species (most notably birds) were unique to either survey. Six introduced species were identified, with the feral pig being the most common.

Further information about fauna including additional baseline surveys that have been completed for the Proposal can be found in Section 5.4.

The Woylie and the Chuditch are both considered “Matters of National Environmental Significance (MNES)” under the Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act). As a result any actions that have, or are likely to have, a significant impact on a matter of national environmental significance require approval from the Federal Minister for the Environment.**Error! Not a valid bookmark self-reference.** summarises the conservation status of Terrestrial Fauna potentially found within the project area (Figure 2) listed under the Wildlife Conservation Act, EPBC Act and the DPaW Priority Fauna List.

Table 2: Conservation Status of listed Terrestrial Fauna species known to occur in or around the NBG Project Area (as of 27th October 2014).

Species	Wildlife Conservation Act 1950 (WA)	EPBC Act 1999 (Commonwealth)	DPaW Priority Fauna List
Chuditch *Dasyurus geoffroii*	Vulnerable (Schedule 1*)	Vulnerable	-
Woylie/Brush-Tailed Bettong *Bettongia penicillata ogilbyi*	Vulnerable (Schedule 1*)	Endangered	-
Quenda *Isoodon obesulus fusciventer*	-	-	P5
Western Brush Wallaby *Macropus irma*	-	-	P4
Brush-tailed Phascogale *Phascogale tapoatafa subsp. Ssp. (WAM M434)*	Vulnerable (Schedule 1*)	-	-
Water-rat *Hydromys chrysogaster*	-	-	P4
Numbat *Myrmecobius fasciatus*	Vulnerable (Schedule 1*)	Vulnerable	
Red-tailed Phascogale *Phascogale calura*	Vulnerable (Schedule 1*)	Endangered	-
Western Ringtailed Possum *Pseudocheirus occindentalis*	Vulnerable (Schedule 1*)	Vulnerable	-
Quokka *Setonix brachyurus*		Vulnerable	-

***Schedule 1 fauna are species considered 'rare or likely to become extinct and in need of special protection'**

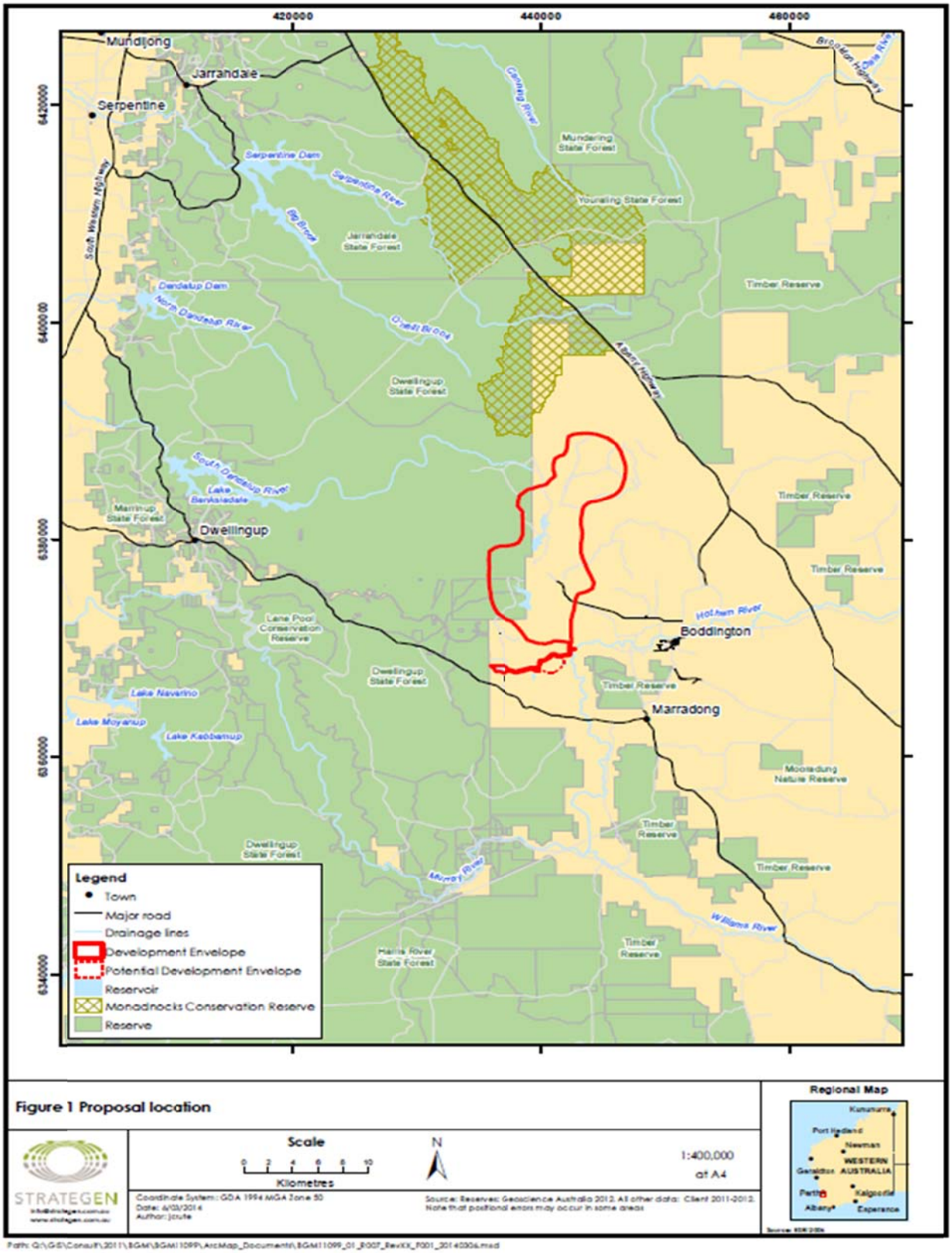

Figure 1: NBG Location Plan

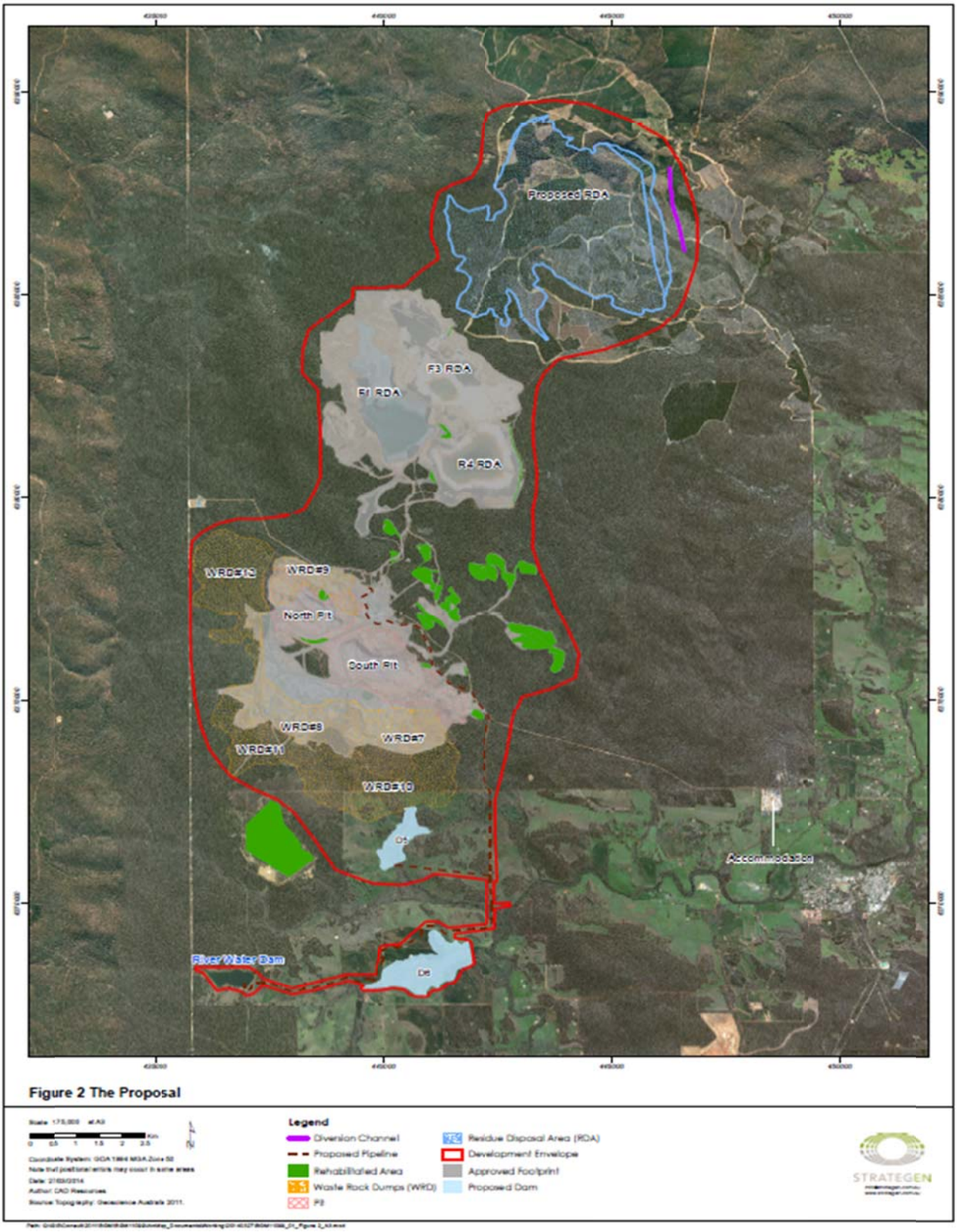

Figure 2: NBG Aerial Location outlining approved Development Envelope "Project Area"

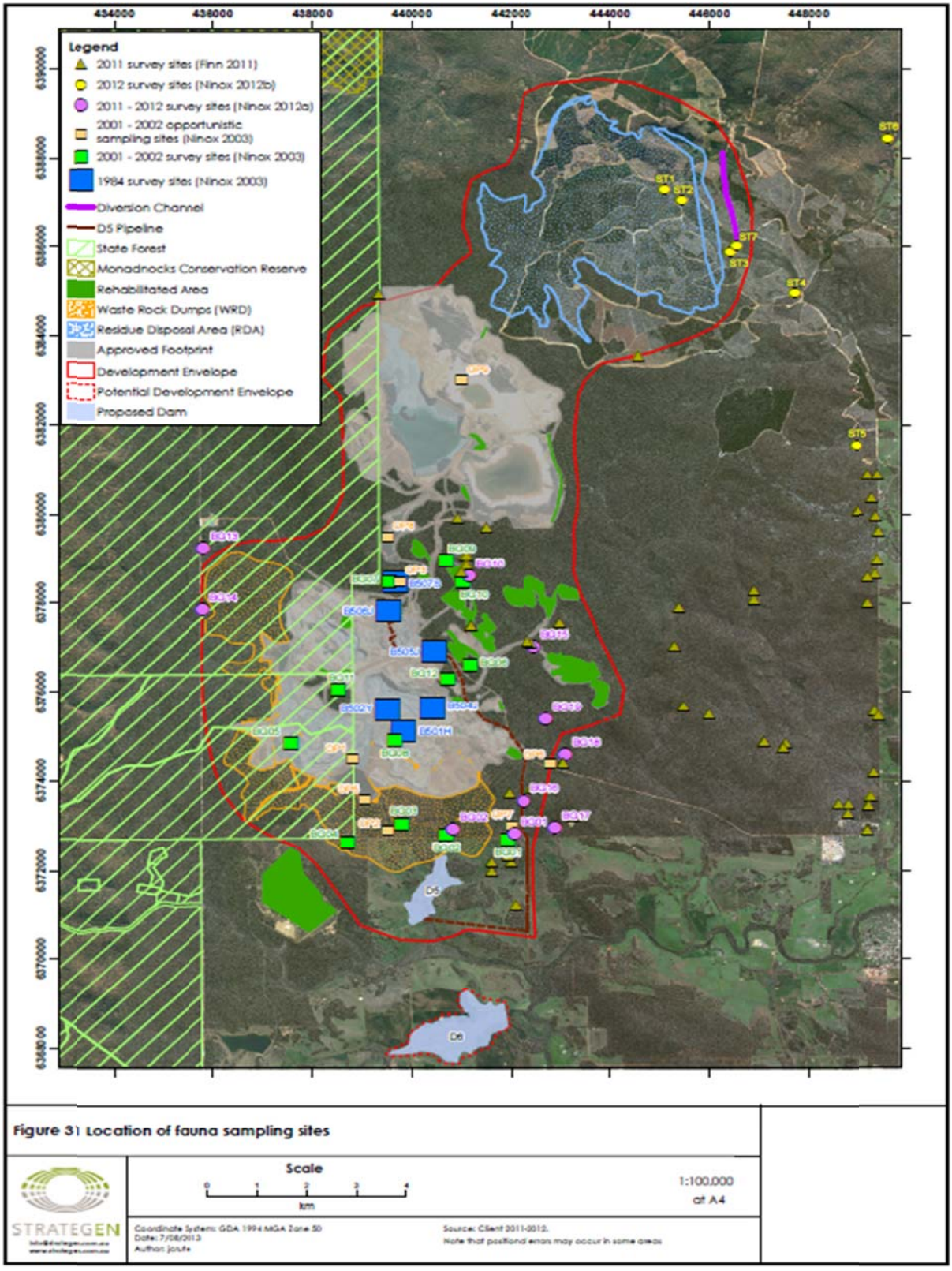

Figure 3: Historic and Current NBG Fauna Monitoring Sites

SPECIES INFORMATION

5.1. Chuditch (Dasyurus geoffroii)

The following information has been summarized from the WA Department of Conservation Chuditch *Dasyurus geoffroii* Recovery Plan, 2012.

5.1.1. Description

The chuditch (*Dasyurus geoffroii)* is one of six quoll species native to Australia and New Guinea. The chuditch is the largest carnivorous marsupial (family Dasyuridae) occurring in Western Australia. At maturity it is about the size of a small domestic cat, males weighing an average of 1.3 kg and females an average of 0.9 kg. The chuditch is distinguishable from other mammals within its present range by its white spotted brown pelage, large rounded ears, pointed muzzle, large dark eyes and a non-hopping gait. The tail is about three quarters of the head and body length, and has a black 'brush' over the dorsal surface of the distal portion.

5.1.2. Species Range

The chuditch formerly ranged across nearly 70 percent of the continent, occurring in every mainland State and Territory (**Figure 4**). It was relatively abundant over this large range at the time of European settlement (Collett 1887, as cited by Serena *et al* 1991; Whittell 1954; Johnson and Roff 1982; Burbidge *et al.* 1988) however, a drastic decline in numbers and a contraction of range has occurred since that time. In Western Australia, the species was still abundant in the wheatbelt in 1907, but had disappeared from coastal areas north of Geraldton by this time (Thomas 1906; Shortridge 1909). Chuditch had not been recorded on the Swan Coastal Plain since the 1930s, however there have been records in the outer metropolitan areas.

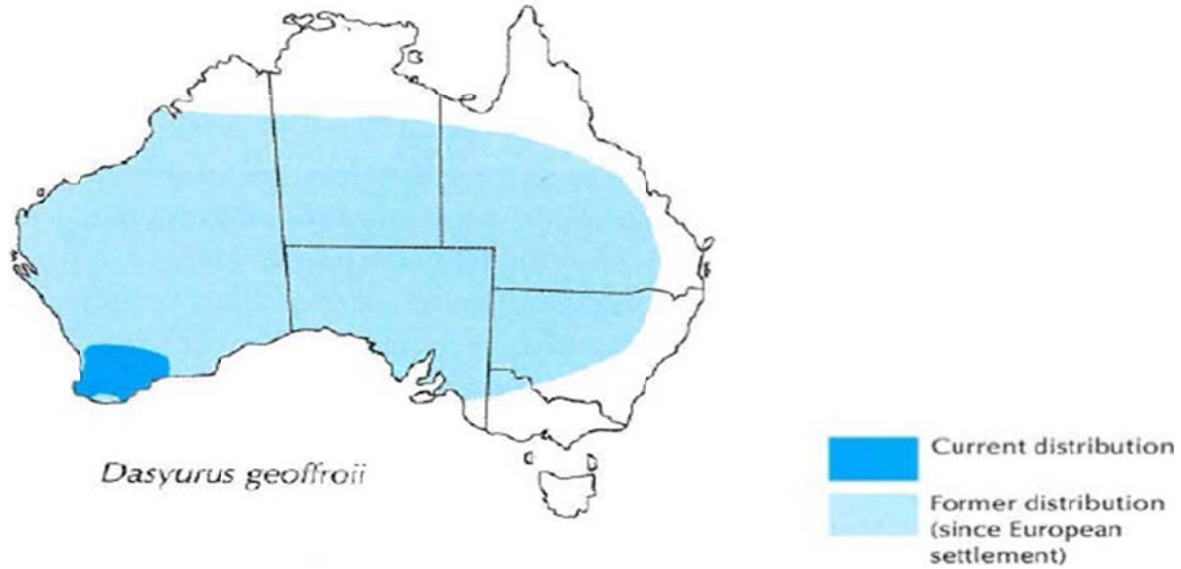

Figure 4: Chuditch Historic and Current Distribution

The major portion of the remaining natural populations occur in varying densities in jarrah (*Eucalyptus marginata*) forests and woodlands in the south-west corner of WA, and in woodlands, mallee shrublands and heaths along the south coast, east to the Ravensthorpe area.

5.1.3. Habitat requirements

Chuditch use a range of habitats including forest, mallee shrublands, woodland and desert. The densest populations have been found in riparian jarrah forest. Chuditch require adequate numbers of suitable den and refuge sites (horizontal hollow logs or earth burrows) and sufficient prey biomass (large invertebrates, reptiles and small mammals) to survive. They are capable of travelling long distances and have large home ranges, and even at their most abundant, chuditch are generally present in low numbers. For this reason they require habitats that are of a suitable size and not excessively fragmented.

Chuditch have historically been present in a large variety of habitats so it is not possible to list a set of characteristic habitats that should be preserved for chuditch. However, some key aspects are required for chuditch survival in an area. These are: adequate den resources (e.g. hollow logs, burrows or rock crevices), adequate prey resources (particularly large invertebrates) and sizeable areas (> 20 000 ha.).

5.1.4. Life History – Reproduction and Mortality

In the south-west and wheatbelt, chuditch are seasonal breeders. Mating occurs, in late April to early July. Chuditch are a supernumerary breeder (Morton *et al.* 1989) and, following a gestation period of about 17-18 days, females can produce up to 50 foetuses, each 5mm long and weighing 9-15 mg, however only 2-6 young successfully attach to the available six nipples. The young remain in the mother's pouch for about 61 days and are then left in the den while the mother forages. By 110 days of age they are well furred and begin eating solid food. They are fully weaned at 170 days of age and subsequently disperse.

Both males and females are sexually mature and can breed in their first year. Fecundity appears to be highest in first year females, which also comprise more than half the breeding female population. The population sex ratio is close to parity, both in the case of pouch young and breeding adults.

Wild chuditch usually die before their fourth year; the average life span for established adults is two years. Factors contributing to chuditch mortality in the jarrah forest include vehicle strikes, illegal shooting, predation by foxes, raptors and feral cats, injury in rabbit traps, natural accidents and disease. As chuditch commonly forage along dirt roads and tracks, the potential for vehicle strikes and encounters with predators is increased.

5.1.5. Life History – Diet and foraging activity

Chuditch are opportunistic feeders, foraging primarily on the ground and at night. They may climb trees to obtain prey or to escape from predators. In the forest, insects and other large invertebrates comprise the bulk of their diet, though some mammals, birds and lizards are also included (Serena et al.1991). The red pulp surrounding Zamia (Macrozamia riedlei) seeds is sometimes consumed, as well as small fruits and parts of flowers. In the arid zone, the diet of chuditch includes live mammals, carrion, lizards, frogs and invertebrates (Johnson and Roff 1982; Burbidge *et al.* 1988). Chuditch will also scavenge for food scraps around campsites and consume the remains of animals killed on roads.

Chuditch are primarily a nocturnal species, although they are sometimes active during the day during the breeding season or when cold, however wet weather restricts nocturnal foraging.

Food is most limited during the colder months from June to August. They have a keen sense of sight, hearing and smell to locate and capture prey.

5.1.6. Historical Impacts/Threats

Many factors may have contributed to the decline of the chuditch including habitat alteration caused by rabbit and livestock grazing, changing fire regimes, and land clearing; predation by, and competition from, feral dogs, foxes and feral cats; epidemic disease, shooting and poisoning (Shortridge 1909; Marlow 1958; Finlayson 1961; Burbidge and Fuller 1979; Johnson and Roff 1982; Burbidge et al. 1988; Abbott 2006). However, decreases in productivity and the diversion of resources to humans, domestic stock and feral animals, associated with habitat alteration and predation by introduced mammals, are probably the primary cause in the decline of many native mammals, including chuditch (Burbidge and McKenzie 1989).

The major threats to chuditch currently are:

- Land clearing, particularly of riparian vegetation, and the removal of suitable den logs and den sites from chuditch habitat;
- Predation by, and competition from, foxes and feral cats; and
- Deliberate and accidental mortality from poisoning, trapping, illegal shooting, and road kills.

5.2. Woylie (*Dasyurus geoffroii*)

The following information has been summarized from the National Recovery Plan for the Woylie, *Bettongia penicillata ogilbyi*, 2012.

5.2.1. Description

The woylie *Bettongia penicillata ogilbyi* (family Potoroidae) is a small native marsupial 1-1.5 kg in weight. Head and body length is 280-360mm and tail length is between 290-360mm. Their fur can be grey to reddish brown and they have strongly clawed fore feet used for digging for food and nest making. There is a distinctive black brush at the end of their tail and the prehensile tail is sometimes used to carry nesting material (Troughton 1973). They rest during the day in a well-concealed nest, built over a shallow depression that is most commonly constructed of long strands, preferably grasses, but also other material such as strips of bark (in the forest) or dried seagrass and/or triodia (in arid coastal areas) (Christensen and Leftwich 1980). When disturbed from the nest, they will move quickly with head low and tail extended, sometimes colliding with obstacles in their haste to flee.

5.2.2. Species Range

Past distribution

The brush-tailed bettong, in its various subspecies, once occupied most of the Australian mainland south of the tropics including the arid and semi-arid zones of Western Australia, the Northern Territory, South Australia, New South Wales and Victoria. This exceptionally broad habitat tolerance is a feature of the species that sets it apart from many of its marsupial relatives and is indicative of its capacity to survive in a range of habitats in the absence of exotic predators.

Present distribution

The woylie distribution is concentrated in the south west of Western Australia however there are also translocated populations reaching as far north as Shark Bay and as far east as the New South Wales and South Australian border. The last four remaining indigenous populations are all in south west Western Australia (Mawson 2004; Pacioni 2010; Pacioni et al. 2010). These are Perup, Kingston, Dryandra woodland and Tutanning nature reserve. Woylies have been re-established at an additional 22 locations [Western Australia (n = 16), South Australia (n = 5) and New South Wales (n = 1)] where woylies were historically known to occur (Freegard 2007; Figure 4). All of these populations have been established via introductions or reintroductions with animals sourced from one or more of the four indigenous populations. Figure 5 shows the current distribution of the woylie in Australia. 'Insurance' populations have been established at Whiteman Park Recreation and Conservation Reserve (near Perth) and Perup Sanctuary (a 420 ha fenced area, east of Manjimup).

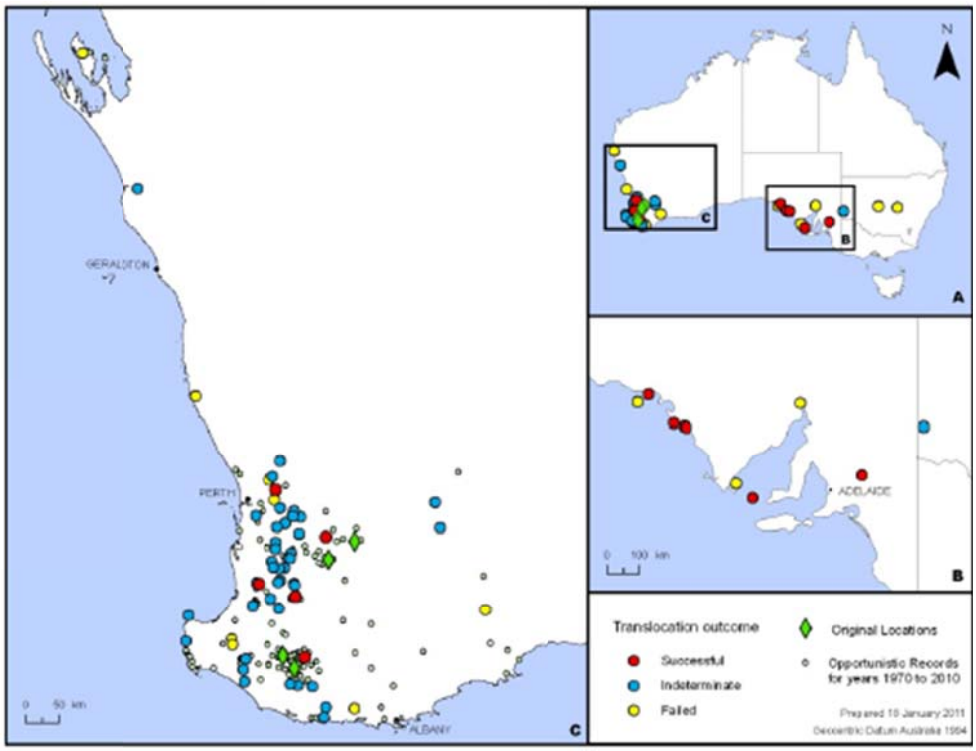

Figure 5: Current Distribution of the woylie (As of May 2011)

They occupy home ranges, the size of which varies between habitats, sites and according to woylie density. Small home ranges (less than 6ha) are generally observed at high density occurrences (Nelson 1989 in Nelson *et al*. 1992; Hide 2006). Males tend to have larger home ranges than females (Sampson 1971; Leftwich 1983), although this is not always so when woylies are at higher densities (Yeatman 2010).

5.2.3. Habitat requirements

Although habitat suitable for the woylie varies across its current range, a number of key habitat requirements appear to be essential for the persistence of the species within this range. Woylies may persist in the following habitats where there is adequate introduced predator (fox and cat) control or exclusion:

- tall eucalypt forest and woodland;

- dense myrtaceous shrubland; or,
- kwongan (proteaceous) or mallee heath.

All habitat meeting the above key requirements within the current range, which is either known to be occupied by woylies or to have the identified potential to be occupied by woylies, is considered habitat critical to the survival of the species.

5.2.4. Life History – Breeding

Woylies can breed continuously throughout the year (Sampson 1971). It is not uncommon for a large proportion of females at a monitoring site to be either carrying young or suckling a young at heel. The proportion of females caring for young tends to be lower in the drier months when conditions for survival are harsher. Woylies produce a single young at a time, but twins have occasionally been observed (Sampson 1971). Woylies exhibit embryonic diapause, so it is possible for females to carry a blastocyst in the uterus, young in the pouch and have a young at heel (Smith 1989; Smith 1996). They have the potential to breed continuously, producing a maximum of three young in a year (Serventy 1970). A summary of the reproductive characteristics of woylies is contained in Table 3.

Table 3: Reproductive Characteristics of the Woylie

Reproductive characteristic	Duration/Number
Age of female sexual maturity	170-180 days
Gestation	21.2 days
Number of pouch young	1, rarely 2
Pouch life	90 days
Maximum number of young produced in a year	3

Life expectancy for woylies is approximately 4-6 years (Christensen 1995) although there is evidence of individuals reaching 7 years in the Dryandra Woodland population (DEC, unpublished data), 8 years at Karakamia Wildlife Sanctuary, 9 years in the Upper Warren (DEC, unpublished data) and 14 years in captivity (Keynes 1989). They are solitary animals but nest sharing (usually mother and young at heel) has been recorded (Sampson 1971; Christensen and Leftwich 1980; Start et al. 1995).

5.2.5. Life History – Diet

A wide range of food types have been recorded in the diet of the woylie including leaf material, seasonal fruits/berries, roots, tubers, bark and invertebrates (Sampson, 1971; Nelson, 1989; Zosky et al. in prep). In southwest Western Australia, woylies feed extensively on hypogeous fruiting bodies of ectomycorrhizal fungi (Christensen 1980; Lamont et al. 1985; Zosky et al. 2010). While an earlier study found more fungi in the diet of woylies in summer-autumn at Boyicup in Western Australia, (Christensen 1980), more extensive recent research throughout the Upper Warren retgion and Karakamia Wildlife Sanctuary has shown fungi to be the main dietary component throughout the year with a seasonal peak in autumn-winter, corresponding with availability (Zosky et al. in prep). At Venus Bay Conservation Park in South Australia, woylies were found to consume fungi in similar proportions to other bettong populations but there were fewer species available and roots and tubers were eaten when fungi availability was low (Lee 2003). On Venus Bay “Island A” however, fungi were not found to be a significant dietary component (Nelson 1989).

During nocturnal feeding activities, woylies make a large number of small diggings that disturb the soil surface. In a study site at Dryandra Woodland a digging rate of 38 to 115 diggings/bettong/night was recorded

5.2.6. Historical Impacts

There are a considerable number of historical impacts that have reduced the size and location of woylie populations. Those significant impacts include;

- Fox and Feral Cat Predation
- Habitat Alteration
- Native Predators
- Climate Change
- Disease (Dieback)
- Mining Activities

5.3. Potential Risks

Through the LOM Extension Project the following potential risks (direct impact) were identified as having the potential to have a direct impact on the Woylie and the Chuditch:

- vehicle strike within the project site;
- fragmentation of habitat between eastern and western areas of the project site;
- poor rehabilitation leading to long term demise of suitable habitats;
- feral animals such as pigs, foxes and cats impacting species numbers;
- lack of knowledge by employees leading to poor take-up of mitigation strategies.

Additional risks that also require ongoing management however have an indirect impact on the species include but are not limited to:

- introduction of weeds and other exotic flora species which out competes vegetation required by both the Woylie and the Chuditch;
- unabated spread of forest disease;
- unauthorised access onto the project area by recreational vehicles and hunters;
- lack of egress mats in sumps and containment ponds leading to animals becoming trapped; and
- absence of watering points around key facilities such leading to animals accessing structures such as the Residues Disposal Area (RDA).

5.4. Baseline Information

The following sections provide a summary of Terrestrial Fauna monitoring and key findings conducted at NBG since 2001.

5.4.1. The Vertebrate Fauna of the Boddington Gold Mine, (Ninox, 2003).

This report describes the results of a vertebrate fauna survey carried out over three seasons during 2001 and 2002. Field work was carried out in spring (21 - 27 November 2001); autumn (23 - 28 March 2002); and winter (5 - 11 July 2002). Due to the large number of Chuditch (*Dasyurus geoffroii*) captured during this study, with several new animals being recorded in the final winter survey, it was decided to continue cage trapping in all 10 sites in an attempt to define the population of this species within the BGM study area. An additional two sites were also sampled in an effort to more accurately assess movement patterns through the area.

Eight native mammal species were recorded during this study. The most common animal trapped was the Chuditch with a total of 37 individuals. Several were captured in more than one site and many were trapped several times during the three sampling sessions. The two additional sampling sessions and sites resulted in the addition of 11 new animals. Of the 33 individual animals recaptured, 18 had moved between sites and in some cases, up to four sites

had been visited. The longest movement was by a male which had moved approximately 4km. There appears to be no discernible pattern of habitat use or seasonality by either female or male Chuditch. The total of seven individual Wambengers (*Phascogale tapoatafa*) captured is also significant for this extremely elusive animal.

Sixteen reptile species were recorded during this study consisting of one Gecko, two Legless Lizards, one Dragon, nine Skinks, one Monitor, one Blind Snake and one Elapid (venomous) Snake. Only one species of Skink, *Lerista distinguenda*, was captured in every site. Ten of the 16 species were captured in less than half of the sampling sites, with four being recorded only from a single site. There does not appear to be any correlation between species richness and habitat type or position in the landscape. For example, the two sites with the highest species richness were the low-lying Wandoo site BG01 and the upper slope Jarrah site BG07.

Five introduced mammals were recorded during this study with Pigs being the most common feral animal. All other introduced species were uncommon, for example, only a single House Mouse (*Mus musculus*), and one Feral Cat (*Felis catus*) were captured during the whole study.

Extensive changes to sampling procedures have taken place since1984, and several original sites no longer exist, therefore only presence/absence data have been used in comparisons with the 1984 results. Although captured in 1984, there is an apparent absence of dunnarts and pygmy-possums during 2001-2. However, the major change appears to be a large increase in population of larger, carnivorous marsupials such as the Common Wambenger and Chuditch. When analysed on an 'animals per 100 trapnights' basis, Common Wambengers have increased from a capture rate of 0.23 to 0.56 animals per 100 trapnights. However, the increase in population of Chuditch from 0.46 to 2.28 animals per 100 trapnights overshadows all other data. The presence of such a large population of Chuditch may have had an adverse impact on small mammal numbers. Two medium-sized mammals, the Southern Brown Bandicoot (*Isoodon obesulus fusciventer)* and Common Brushtail Possum (*Trichosurus vulpecula*), not recorded in 1984, were present during this current study.

Four mammal, five bird and two reptile species listed as rare, threatened or vulnerable are known to occur within the habitats of the BGM. Of these, one bird and one reptile species recorded in 1984 were not recorded in 2001-2 and one mammal and one bird species not recorded in 1984 were recorded during this current study.

More immediately, as many of the female Chuditch appeared to have lost body condition, and their pouch young, between the August and September/October sampling, it is recommended that further sampling of this species is undertaken in the near future to determine whether the population is in decline within the BGM and/or whether successful breeding had taken place.

5.4.2. Vertebrate Fauna Survey within Newmont Boddington Gold Mine: An Assessment of Potential Waste Rock Disposal Areas (Ninox, 2012a)

This report describes the results of a vertebrate fauna survey carried out over two seasons during 2011-12. This current study (2011-12) was commissioned in order to provide sufficient information to assist with the selection of the location for new areas of disturbance and consisted of two seasonal sampling periods for birds, mammals, amphibians and reptiles (autumn and summer). Three sites originally sampled in 2001-02 were still suitable for sampling during 2011-12: BG01; BG02; and BG10. Seven additional systematic sampling sites were chosen in consultation with NBGPL environmental staff and E.M. Mattiske of Mattiske Consulting Pty Ltd. These sites were distributed throughout the area to accurately represent the range of major fauna habitats which occur and to replicate some of the 2001-02 sites that either were no longer in existence or had been affected by a recent wildfire. A total of 8,960 trapnights and 150 hours of bird observation were completed during the survey; in addition, 36 hours of

Black-Cockatoo nesting searches were undertaken. Two Anabat© bat echolocation devices were also set throughout the sampling area during the field study program.

In total 19 species of native mammal have been recorded in the various habitats of the NBG area since 1984. Sixteen species, including six bat species, were recorded during 2011-12. Some such as the Echidna (*Tachyglossus aculeatus*) were mainly recorded by signs such as scats or diggings but the majority of other animals were trapped. The most common native mammal was the Common Brushtail Possum (*Trichosurus v. vulpecula*) with 32 individuals from seven of the 10 sites. Two of the 10 sampling sites had a particularly rich and diverse native mammal fauna. In addition to the native mammals discussed above, six species of bat were also recorded by the use of Anabats©. Five of these species were identified with a high degree of confidence and one (*Nyctophilus*) could not be determined to species level.

Five of the 10 native mammals recorded are of conservation significance:

1. Chuditch (*Dasyurus geoffroii)* - Four female and four male Chuditch were captured during this survey;
2. Brush-tailed Phascogale (*Phascogale tapoatafa*) - Three individuals were captured during this current study;
3. Southern Brown Bandicoot or Quenda (*Isoodon obesulus fusciventer*) - Five individuals were captured during this study;
4. Brush-tailed Bettong (*Bettongia penicillata ogilbyi*): - Three individuals were trapped in cage traps during this study; and
5. Western Brush Wallaby (*Macropus irma*): - This species was observed in two sites and fresh scats attributed to this species were located in three sites.

The 2011-12 survey area can be divided into four main locations that were being considered for extensions to the Waste Rock Disposal area:

1. the south-east section encompassing sites BG01, BG02, BG16 and BG17;
2. the east section encompassing sites BG18 and BG19;
3. the north-east section encompassing sites BG10 and BG15; and,
4. the north-west section encompassing sites BG13 and BG14.

While all of the four sections support a range of significant vertebrate fauna species, it is apparent that the north-east section encompassing sites BG10 and BG15 supports more than any other section; in particular, the native mammals of conservation significance dominate in this area. It is understood that the results of this current study will assist in decision making for the placement of future waste rock.

5.4.3. A Vertebrate Fauna Survey within the Saddleback Treefarms area. Newmont Boddington Gold Mine an Assessment of potential Residue Disposal Areas. (Ninox, 2012b)

This report describes the results of a vertebrate fauna survey carried out during summer and autumn 2012. The survey took place within forestry plantation lands just north-east of the NBG mine, approximately 15 km NNW of Boddington, Western Australia. This area was purchased by Newmont from Sotico in 2011 and is now referred to as Saddleback Tree Farms (STF). The area is being considered for a new residue disposal area (RDA) as the gold mine expands in the future. There have been a number of studies of vertebrate fauna within the NBG mine area and the results of this vertebrate fauna survey within the STF Survey Area are compared with the results from all of these previous studies.

The main study objectives were to describe the fauna and their habitats within a previously defined area within the STF Survey Area, identify any fauna or habitats of conservation significance, and to determine the potential impacts of development of the RDA.

The study consisted of a detailed Level 2 survey as defined by the Environmental Protection Authority, consisting of two sampling sessions during 2012: summer and autumn. A spring survey 2011 was originally planned but for a number of reasons, including extremely unseasonal weather conditions, the survey could not commence until January 2012. Six systematic and one opportunistic sampling site were chosen in consultation with the project flora and vegetation consultant. The survey area consisted almost entirely of Wandoo woodlands with an extensive swamp situated in the lowest level of the landscape. Ground-dwelling vertebrates were sampled by a variety of techniques totaling 5,642 trapnights; birds were sampled systematically within each sampling site, totaling 52.5 hours of observation. Bats were sampled by two Anabat© echo-location call recorders placed throughout the survey area.

Fifteen species of native mammals, including six species of bat (one species identification not confirmed), were recorded during the survey. Three of these native mammals recorded are of conservation significance:

1. Chuditch (*Dasyurus geoffroii*), 11 individuals captured;
2. Southern Brown Bandicoot or Quenda (*Isoodon obesulus fusciventer)*, nine individuals captured;
3. Western Brush Wallaby (*Macropus irma*), one individual seen.

Of the introduced animals known to occur in the general area, only one bird and two mammals were recorded during this survey: the Laughing Kookaburra (*Dacelo noveaguineae*); House Mouse (*Mus musculus*) and Pig (*Sus scrofa*).

A search of government department fauna databases showed that additional species of conservation significance or their habitats could occur in the STF Survey Area. These include eight mammals, three reptiles and nine birds. However, given their habitat preferences and details of previous occurrence, only five of the mammals, two of the reptiles and three of the birds have the potential to be present within the STF Survey Area.

Three additional native mammal species have been recorded in the nearby NBG mine area between 1984 and 2012 that were not recorded within the STF Survey Area. These three are considered to have the potential to occur.

None of the exotic predators such as foxes (*Vulpes vulpes*) or cats (*Felis catus*) that are known to occur in the general area were noted within STF Survey Area during 2012.

The Wandoo woodlands of the STF are locally significant because of the number of medium-sized native mammals that were recorded during two sampling sessions in 2012 including 11 Chuditch, nine Southern Brown Bandicoots and 17 Common Brushtail Possums. Four Chuditch, six Southern Brown Bandicoots and 10 Common Brushtail Possums were added to the area database in the final days of the second sampling period, clearly indicating that yet more individuals could be present.

It was concluded that all of the locations surveyed during January and March/April 2012 supported a wide range of vertebrate fauna species, including a number of fauna species of conservation significance that are protected under both Federal and State government legislation. The habitats sampled were relatively undisturbed given that much of the area has been managed as a pine plantation for many years, resulting in corridors and remnants of native vegetation. However, these remnants supported a substantial proportion of the vertebrate fauna that could be expected to occur as resident species in the area.

6. LEGAL AND OTHER REQUIREMENTS

6.1. Legal

6.1.1. Legal Database

To ensure all NBG personnel have access to current Legal requirements and other Commitments, Newmont maintains a Legal and Other Commitments database. This database includes both a hard copy and electronic Legal Database which references all approvals and associated conditions granted to the operation. The hard copy database is located in the Environmental Superintendent's Office, whilst the Electronic database is available on the Newmont Intranet (Prospector – link below).

The conditions and specific obligations for all current project approvals can be found within the Legal Database. This database must be used as the primary source of accessing approval documentation to avoid personnel accessing potentially out-dated information replicated in other documents, such as this Management Plan.

http://prospector.newmont.com/apac/depts/ims/Pages/LORCUC.aspx

In addition to the above, desktop and field verification audits may also be completed from time to time by the EPA and DotE to verify Boddington's compliance with approval conditions.

6.1.2. Federal Legislation

1. Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act)

The Australian Government Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) protects species listed under Schedule 1 of the Act. In 1974, Australia became a signatory to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). An official list of these endangered species is prepared and is regularly updated by DotE. The current list differs from the various State lists; however, some species are common to both.

2. EPBC Act Recovery and Threat Abatement Plans

In addition to the EPBC Act and in conjunction with State environmental regulators, Recovery and Threat Abatement Plans have been written to focus the management of specific species or environmental risks. The Federal Minister for the Environment may make or adopt and implement recovery plans for threatened fauna, threatened flora (other than conservation dependent species) and threatened ecological communities listed under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).

Recovery plans set out the research and management actions necessary to stop the decline of, and support the recovery of, listed threatened species or threatened ecological communities. The aim of a recovery plan is to maximise the long term survival in the wild of a threatened species or ecological community. Recovery plans should state what must be done to protect and restore important populations of threatened species and habitat, as well as how to manage and reduce threatening processes. Recovery plans achieve this aim by providing a planned and logical framework for key interest groups and responsible government agencies to coordinate their work to improve the plight of threatened species and/or ecological communities.

Threat abatement plans provide for the research, management, and any other actions necessary to reduce the impact of a listed key threatening process on native species and ecological communities. Implementing the plan should assist the long term survival in the wild of affected native species or ecological communities.

Recovery and Threat Abatement Plans relevant to the management of Terrestrial Fauna at NBG include;

- Chuditch Recovery Plan
- Woylie Recovery Plan
- Feral Cat Threat Abatement Plan
- Red Fox Threat Abatement Plan
- Feral Pig Threat Abatement Plan

Further information on each of the above plans can be found within Section 7.2 System Controls.

6.1.3. State Legislation

In a legislative context, the preservation and conservation of fauna is covered primarily by the following Western Australian legislation:

- Wildlife Conservation Act 1950 (WC Act).
- Conservation and Land Management Act 1984 (CALM Act).

In Western Australia, rare or endangered species are protected by the Wildlife Conservation (Specially Protected Fauna) Notice 2012, under the WC Act. Schedules 1 and 4 in this notice are relevant to this plan, providing a listing of those species protected by this notice.

The DPaW (Nature Conservation Division) Priority Fauna List also nominates conservation species from Priority 1 to 5. It is expected that the potential impacts of a proposal to these Priority listed species should be managed such that the species do not meet the IUCN criteria for threatened species, as a result of this proposal.

1. ***Wildlife Conservation Act 1950 (WA act)***

- Allows for the approved interaction with Wildlife through the issuing of licences
- Makes it an offence to take rare flora or fauna from any land without first obtaining written consent from the Department of Parks and Wildlife.

2. ***Conservation and Lands Management Act 1984 (CALM Act).***

"An Act to make better provision for the use, protection and management of certain public lands and waters and the flora and fauna thereof, to establish authorities to be responsible therefor, and for incidental or connected purposes"

- Defines the types of land which falls under the Act (includes State Forest).
- Controlling Bodies established to administrator the land (Eg Conservation Commission).
- Management of the land under the Act including control and eradication of Forest Diseases
- Requirements for permits, licences contracts, leases etc
- Supported by;
    - ***Conservation and Lands Management Regulations (2002).***
        - Focuses on the protection of the environmental on state owned land.
            - Protection of Flora and Fauna
            - Animals on CALM land
            - Pollution and litter
            - Disturbance of the landscape
            - Access to public land
            - Licenses – eg Apiarist

- ***Forest Management Regulations (1993)***
  - Focuses on the management of timber resources within state owned land.

3. ***Biosecurity and Agricultural Management Act (2007).***

An Act to provide for —
• the control of certain organisms; and
• the use of agricultural and veterinary chemicals; and
• the identification and attainment of standards of quality and safety for agricultural products, animal feeds, fertilisers and other substances and things; and
• the establishment of a Declared Pest Account, a Modified Penalties Revenue Account and accounts for industry funding schemes; and
• related matters.

- Defines the types of organisms permitted, prohibited and the management of unlisted organisms including the importation of organisms into Western Australia.
- Management of Biosecurity Risks within WA (Eg Declared Pests) including implementation of Management Plans.
- Supported by;
  - ***Biosecurity and Agricultural Regulations 2013***
    - Dealing with declared pests and prescribed potential carriers
    - Control of declared pests
    - Quarantine
    - Permits

In addition to this legislation the following documentation has been prepared to position and guide proponents in the management of Terrestrial Fauna.

EPA Position Statement No. 3 Terrestrial Biological Surveys as an Element of Biodiversity Protection.

EPA Position Statement No.3 (EPA 2002) discusses the principles the EPA would apply when assessing proposals that may have an effect on biodiversity values in Western Australia. The position statement is intended to:

- promote and encourage the significance of biodiversity and the need to develop and implement best practice in terrestrial biological surveys
- define the principles the EPA will use when assessing projects that may impact on biodiversity values.

EPA Guidance Statement No. 56 Terrestrial Biological Surveys for Environmental Impact Assessment in Western Australia, 2004.

EPA Guidance Statement No.56 (EPA 2004) provides guidance on standards and protocols for terrestrial fauna surveys, particularly those undertaken for the EIA of proposals. It identifies minimum requirements for terrestrial fauna surveys including:

- approaches, resources and standards required
- stage when surveys should be conducted
- who should land and undertake fauna surveys
- timing of surveys
- type and extent of survey
- survey sampling density and intensity.

6.1.4. Fauna Licences

NBG holds the following licences required under the *Wildlife Conservation Act 1950 (WA act)*;

- Licence to Take Fauna for Educational or Public Purposes
- Reptile Removalist's Licence

It is a requirement of both licences that a fauna handling return is submitted outlining any fauna interacted with during the respective reporting period.

Each licence must be renewed prior to the expiry date and is managed in accordance with the *NBG Legal Requirements and Other Commitments* Procedure.

6.1.5. Permits and Approvals

NBG operates under two main approvals that contain management requirements relating to terrestrial fauna;

1. EPBC Act approval 2012/6370 (DotE)
    a. Requires an approved Management Plan for the Management of Terrestrial Fauna with a focus on Woylie and Chuditch (this document).
2. Ministerial Statement 971 (EPA)
    a. Requires an Offset Management Plan that takes into consideration the impacts to Woylie and Chuditch

In addition and where appropriate Mining Proposal's approved by the Department of Mines and Petroleum (DMP) also consider the impacts to terrestrial fauna within the management objectives.

Conditions and Commitments from the documents outlined above including the current compliance status can be found within the NBG Legal Register.

http://prospector.newmont.com/apac/bodd/Environment/DepartmentDocuments/Forms/AllItems.aspx

6.2. Other

6.2.1. Newmont Mining Corporation - Biodiversity Management Standard

This Global Standard sets the minimum requirements for the management of biodiversity at Newmont owned, operated and/or managed operations and lands with the goal of ensuring a consistent approach to biodiversity conservation and sustainable stewardship of resources. The standard is broken down into three (3) phases which include;

- Planning and Design
- Implementation and Management
- Performance Monitoring

A copy of the standard can be found by accessing the following link;

http://prospector.newmont.com/global/depts/esr/Pages/Standards.aspx

7. MANAGEMENT STRATEGY

The following section outlines those specific management controls that NBG has established and implemented to reduce impacts, meet our obligations and achieve our performance criteria with regards to Terrestrial Fauna Management. Where appropriate documentation has been cross referenced within the respective topic as is also included within the reference table in Section 19 of this Management Plan.

7.1. Physical Controls

7.1.1. Vegetation Clearing

Vegetation clearance coupled with habitat alteration and degradation is the major cause of impacts on terrestrial fauna in the northern jarrah forest. To minimise this impact, strict controls are in place to ensure disturbance of new areas is only permitted once externally approved by both State and Federal government agencies. In 2014, external approvals were obtained to extend the NBG business plan and includes disturbance that may not be required for a number of years. In such cases consideration must be made to the approach taken to clearing.

When assessing a project and considering land to be impacted the approach taken must focus on minimising impacts to the environment. This can be achieved via;

- Staging disturbance to impact only land required within the immediate future.
- Prioritising previously cleared, degraded or impacted land for use before impacting native vegetation. This includes selecting previously rehabilitated land before impacting undisturbed vegetation.

Implementation of this approach however must take into consideration efficiencies associated with certain activities such as harvesting.

Whilst the impacts of vegetation clearing are an unavoidable necessity for the operation, application of the above management actions will minimse the impact the operations have on terrestrial fauna.

7.1.2. Environmental Disturbance Application Process

Once external approvals have been obtained and the intent to disturb vegetation is established, all work groups must complete a *Ground Disturbance Application Form*. Once complete, the form is assessed by the site based Sustainability and External Relations department who undertakes a field inspection with the work group to consider all potential environmental risks and opportunities associated with the disturbance. This process is supported by the *Ground Disturbance Application Assessment Guideline* which requires the proponent to consider a path of least resistance, flagging to avoid flora species of interest and clear marking of the site before the activity commences. Following the field inspections clearing and where appropriate rehabilitation conditions and project timeframes are finalised and the document is signed by all parties prior to commencement of the activity. Throughout the disturbance activity, field inspections are completed to ensure the work has remained compliant with established conditions with an inspection completed upon project completion to ensure all conditions have been met. Upon completion all disturbance is recorded and reconciled for annual reporting to government agencies.

7.1.3. Restriction of Personnel within forested areas

NBG maintains a policy which requires personnel to obtain approval prior to entering any non-operational area (including forested areas) within and surrounding the project site. This approval

is granted by the SER department and includes establishment of a plan including routes to be taken and the potential impacts or interactions likely to be encountered. The primary focus of this control is to limit the risk of forest disease spread whilst also reducing the potential for spread of weeds and rubbish, erosion, damage to rehabilitated areas, generation of fires from driving over vegetation and vehicle strike events.

During months of the year where heavy rainfall is expected or has occurred, movement within forested areas is limited to monitoring personnel only. These movements are coordinated to minimse impacts to the environment and whereby a potential impact is unavoidable, permission is sought to delay monitoring activities with the respective regulator.

All forest areas within NBG's operational tenements are mapped every three years to track the presence of forest disease. There is also an internal requirement to ensure any areas to be cleared have been assessed within the previous 12 months for the tell-tale signs of forest disease. Whereby this requirement is not met additional surveys are undertaken. Infected areas of forest are mapped on GIS systems and are either signed posted or 'blazed' (trunks marked with paint) in the field to notify drivers entering the area. Exits to these areas are also fitted with mobile wash points to ensure the vehicle is free of soil matter before exit.

7.1.4. Corridors and Connectivity

The presence of wildlife corridors between forested areas and remnant vegetation in the South West of WA is an essential component for facilitating the movement of fauna between habitats. The value of wildlife corridors is well documented and has most recently been supported by the federal government's release of the National Wildlife Corridors Plan: A framework for landscape-scale conservation in 2012 (DSEWPaC, 2012). Within the Boddington Project area and surrounds the presence of wildlife corridors is equally important. Activities associated with the 2014 Life of Mine Extension Project have the potential to temporarily disrupt the existing East/West corridor located to the South of Waste Rock Dumps 7 and 8 due to waste being deposited up to and over the boundary of NBG private forest and Hotham Farm.

As a result, the existing corridor between the East and West Vegetation communities located immediately north of the processing plant and south of the F1/R4 Residue Disposal Areas (RDA's) becomes the primary corridor. This corridor is intersected by an access road between the plant and RDA and a pipeline corridor comprising residue and fresh water pipelines with a maximum diameter of 450mm.

Due to the important role this corridor will play in the future movement of native fauna no expansion activities or disturbance is planned or approved to occur within these areas. Prevention of disturbance within this area is the primary control in maintaining an East/West wildlife corridor. As the area has not been approved for any disturbance to occur within historic project approvals, any request would require approval through State and Federal processes.

Figure 6 highlights the existing corridor likely to be impacted by the proposal and the current corridor to be maintained as well as the location of access roads and infrastructure pipelines.

As discussed within Section 7.1.1 undertaking clearing in a staged manner (where possible) maximizes the time period a corridor remains open for movement. Where viable within the mine plan, options must be considered for executing the southern clearing and waste dump construction in a manner that duration of the corridor.

Section 7.1.12 addresses the general rehabilitation processes and methodology to be used when undertaking reclamation activity at NBG. As discussed all rehabilitation must occur within a timely manner to ensure the duration of impact to any species is minimised. By undertaking rehabilitation in a timely manner (especially within the area south of the existing waste dumps) NBG will ensure the duration of impact on the wildlife corridor is as short as possible.

By maintaining the remaining East/West corridor north of the process plant, limiting clearing to a staged approach, and undertaking all rehabilitation in a timely manner will ensure the presence of a wildlife corridor remains whilst minimising the duration of impact to the one located due south of the approved waste dump expansion.

In addition to the controls outlined above, the following controls are in place at the remaining East/West corridor to promote and maintain the corridor as a fauna pathway

- Vehicle access to the RDA is restricted to authorised personnel minimising vehicle traffic within the area
- Posted speed limits to a maximum of 60km/h
- Signage indicating the increased presence of fauna within the area
- Pipework cross over locations to allow fauna to cross existing pipework
- Drainage sumps located along the access road to minimise impacts to vegetation and provide temporary water sources.

Further information on the management of wildlife corridors can be sourced from within the DotE National Wildlife Corridors Plan: A framework for landscape-scale consideration.

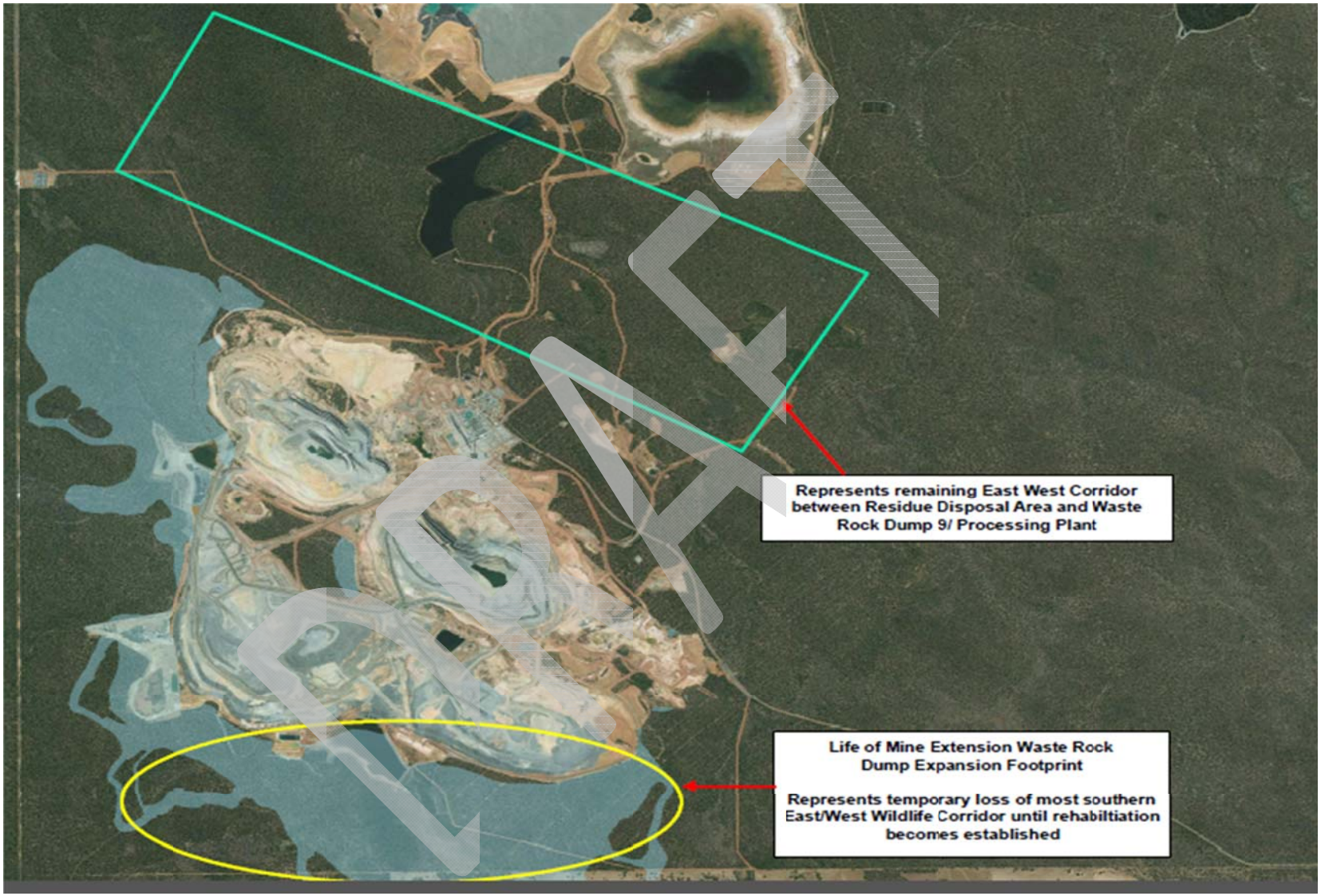

Figure 6: Location of Wildlife Corridors at NBG

7.1.5. Workforce/Fauna Interaction

The potential for interactions between operational personnel and terrestrial fauna at NBG has been identified as a key risk by both the environment and safety departments with the greatest number of 'strikes' observed to occur on the main access road into the operation.

The potential for collisions between operational vehicles and fauna is an unavoidable occurrence on project site roads and as such a number of controls have been put in place to reduce the likelihood for this to occur. These controls are outlined within the *NBG Road Safety and Light Vehicle Procedure* and include;

- Drivers being required to drive to conditions rather than adhering strictly to the posted speed limit;
- The activation of lights and flashing beacons on entry to site to improve visibility;
- Warning signage indicating the presence of wildlife activity;
- Restricted access of vehicles off-road unless otherwise authorised;
- Warning signage indicating the presence of Woylie and Chuditch at the entrance to the site;
- Random drug and alcohol testing of all drivers entering site;
- Random speed checks and penalties for those breaking the rules; and
- Procedures for removing and reporting vehicle/fauna.

Within site induction and awareness programs personal are advised on the hazards and impacts of interactions with wildlife. In particular mine personnel are advised not to approach, feed or interact with wildlife and allow the fauna to move on naturally. Importantly, whereby personnel believe they have observed a Woylie/Chuditch within the project area, they must immediately report this sighting to the Environment department. In cases whereby fauna may be injured, personnel must immediately report the details to the site Environment department or security personnel. Site procedures also outline that any fatality impacted animals are removed from the road to prevent the carcass attracting other opportunistic carnivores.

Within the induction personnel are also advised that pets, plants and firearms are not permitted on the site. Special dispensation can be obtained from the Register Manager to allow the Shire of Boddington Ranger to bring a firearm onsite for the purpose of euthanisation of injured fauna which is covered by the *NBG Firearm Approval Form.*

All Woylie and/or Chuditch sightings and death/injury reports must be reported by NBG within the annual compliance report. This information is also included within the AER.

7.1.6. Workplace Signage and Traffic Management

Warning and advisory signage is used at NBG to make personnel aware of the presence of fauna throughout the operation. The location of signage is based on visual sightings, known pathways or within environments likely to support specific fauna.

Signage specifically noting the presence of Woylie and Chuditch at NBG is a requirement of condition 12 of Federal approval EPBC 2012/6370.

Standard traffic signage is used to control vehicle movements in and around the site. This includes limiting traffic speeds within areas whereby fauna movements are known to occur. Monitoring of personnel traffic movements is conducted periodically to verify conformance with the *NBG Road Safety and Light Vehicle Procedure*. Disciplinary actions are outlined within the traffic management plan which has an escalating consequence, dependent on the seriousness of the breach.

7.1.7. Fauna Relocation

There is no legislative requirement to undertake fauna relocation prior to the clearing of vegetation and whilst the process is considered best practice within the mining industry it is rarely undertaken due to success rates and cost. Issues such as an appropriate relocation site can often be difficult to overcome as most locations are already maintaining population levels suitable for resources available at the site. Whilst the introduction of individuals initially creates a population increase, equilibrium is quickly restored as resource competition becomes an issue. The focus of such programs should target Federal or State listed species requiring protection.

Within approval documentation associated with the Life of Mine Extension project, NBG has committed to undertaking a fauna trapping and relocation program prior to clearing. Within this program noninvasive methods will be used within habitats that could support listed species that are vulnerable to stress during conventional trapping methodologies such as Woylies.

When conducting such programs, specialist fauna consultants must be engaged to ensure the program meets established trapping and relocation program criteria, legal and animal ethics requirements and are conducted appropriately. NBG have an existing relationship with Ninox consulting who have provided historic and current fauna monitoring and management services to NBG.

Within the project area there are occasions whereby fauna may enter an area or become trapped within an area that presents a hazard to the fauna or personnel working within the area. NBG maintains a fauna handling permit through DPaW to manage the safe capture and relocation of fauna within this situation. It is a requirement of this licence that all relocations are recorded and reported to the DPaW in accordance with the frequency defined within the licence. The management of injured or nuisance fauna is outlined within *NBG Fauna Mortality and Injury.*

7.1.8. Waste Management

NBG maintains a waste management system onsite which promotes a focus on the offsite disposal of all waste streams. All putrescible waste generated is placed within sealed receptacles and collected on a routine basis by the site waste contractor. All receptacles located in work areas and final disposal locations are required to have self-closing lids to prevent access and scavenging by wildlife.

NBG is permitted under existing licences to operate a Class 1-2 landfill which accepts inert construction wastes only.

Specific aspects regarding waste management are outlined within *NBG Waste Management Plan*.

7.1.9. Fauna Drinking Points

During the 2006 expansion project planning phase, NBG identified fauna access to the residue disposal areas and exposure to cyanide as a risk requiring management. Ecologists from Donato Environmental Services assessed the risk, including the potential risk to Black Cockatoos. Their research identified a number of measures NBG could implement to minimise the risk of wildlife interacting with residue disposal areas. Many of these measures apply an understanding of animal behaviour to implement strategies that remove the animals from the risk or ensure that the area is unattractive to fauna.

Appendix 1 provides a figure of artificial drinking points located around the perimeter of the RDA.

7.1.10. Management of Injured Fauna

NBG maintains a commitment to the management of injured fauna. As such when injury to fauna occurs personnel must notify the SER or security department (Who in turn notify the SER department) who will respond to the event in accordance with the NBG Fauna Mortality and Injury procedure.

The procedure outlines that in certain situations a judgment decision must be made regarding the potential for rehabilitation of the animal or whether euthanisation is required. Again the process and methods for undertaking this process are outlined within NBG Fauna Mortality and Injury.

Appendix 3 presents the response process decision pathway for the fauna mortality and injury whilst Appendix 4 outlines information on agencies who can provide care and assistance to NBG for the management of injured fauna.

7.1.11. Management of Introduced Fauna Species

Condition 12 (f) of EPBC 2012/6370 highlights three introduced fauna species that are known to occur within the project area and which have the potential to have a significant impact on the Biodiversity of the area. These species include;

- European Red Fox;
- Feral Cats, and
- Feral Pigs.

This condition requires NBG to consider where relevant the information contained within each corresponding Threat Abatement Plan and how this is applied to feral animal management at NBG. Threat Abatement Plans contain information on a variety of topics including background relevant to the species, management factors, control techniques, risk awareness, roles and responsibilities and plan objectives and actions. Section 7.2.4 - 7.2.6 summarises the goals and objectives contained within each Threat Abatement Plans as relevant to the three species outlined above.

NBG commits to the development of measures for the management of feral animals including cats, foxes and pigs and recognises this as a key deliverable following completion of the Land Management Strategy. Each Measure will be developed using the objectives outlined within the respective recovery or threat abatement plan and will be aligned to a corresponding objective. These measures form part of an adaptive management approach that will continue to be developed over time and incorporates land managers from surrounding areas. Following development of the land management strategy and the inclusion of the respective measures, NBG will provide an updated version of the management plan to the federal regulator. Progress made in adaptive management and the establishment and tracking of measures will be reported in the annual compliance report on an ongoing basis.

Commencing in late 2014 and continuing into 2015, NBG are developing a land management strategy with the objective to provide a framework for the management of a range of biodiversity risks including but not limited to weeds, forest disease and feral animal management. A key element of the strategy will be the identification of priority areas whereby management efforts (including feral animal management) will be focused. Threat Abatement Plans will inform this strategy which in turn will help developing plans to address each of the threatening processes identified within the strategy.

In alignment with the objectives of TAP's, priorities will be given to those areas whereby high value species (Such as Woylie and Chuditch) are known to occur. Newmont will collaborate with neighboring land managers (both private and governmental) to develop a coordinated approach

to program management to ensure efforts are viewed on a landscape or area scale. If a landscape approach is not undertaken NBG are susceptible to establishing conditions whereby species are eliminated from an area, however invade from neighboring properties.

In some areas landscape scale management is already undertaken. This includes aerial 1080 baiting which is conducted on adjacent lands owned by the State. On these occasions NBG is engaged by the state regulator (owner of the land) prior to these activities being conducted.

7.1.11.1. Identification of Feral Animals

There are two main methods for the identification and reporting of feral animals at NBG.

1. Visual identification through the personal sightings and reporting and/or recording of wildlife movements via camera traps.
2. Identification of feral animal presence through the identification of tracks and/or scats.

Once identified the details are recorded within site registers to aide in the execution of targeted feral animal management programs.

Outlined below are the two main methods used at NBG for the management of feral animals at NBG;

7.1.11.2. Hog Hoppers

Following the successful implementation by declared species groups and land managers within South West WA, NBG has been trialing the use of the Hog Hopper system for the ongoing management of feral pigs at and around the NBG area. The system uses a square box with a sliding face which can be lifted up and down. Initially the units are placed in the field to allow the pigs to become comfortable with the unit. Next food is placed within the unit to encourage pigs to lift the lid. Over time the free fed is changed to bait containing '1080', resulting in the mortality of any pigs who access the feed.

The Hog Hopper System follows 7 key stages

1. Understanding your target species
2. Timing
3. Site Selection
4. Free Feeding
5. Toxic Baiting
6. Follow Up
7. Pack up – Site relocation

The Hog Hopper process is implemented in the field by the NBG environmental technicians and a licence is held by NBG for the purchasing and use of 1080.

7.1.11.3. Hotham Williams Declared Species Group

NBG has maintained a relationship with the Hotham Williams Declared Species Group (HWDSG) for a number of years. The group is comprised and governed by members of the local community and is focused on the management and eradication of all feral animal species within the region. On an annual basis NBG provide access to personnel from the group to NBG owned private land to undertake an eradication program of any feral animal species encountered.

7.1.12. Rehabilitation and Reclamation

NBG has committed to progressive rehabilitation during the life of the mine. Initially, rehabilitation efforts are planned for the outer slopes of the waste dumps and residue disposal areas as their final landform completion date is known.

The overall goal of the rehabilitation program is to ensure that, upon completion of mining operations, the mine site will have an effective vegetation cover that provides the habitat resources required to support the range of species that inhabited the area prior to mining commencing.

Detailed information regarding progressive and post mine closure rehabilitation is regularly reviewed and updated within the *NBG Mine Closure Plan*. This document must be submitted to state regulators every 3 years (as a minimum) and is generally updated following changes in assumptions regarding mine closure as the results of ongoing studies are further understood.

The Mine Closure Plan contains specific information regarding measures to maximize rehabilitation during operations as well as how rehabilitation activities will be undertaken. Completion Criteria regarding the Aspect of Fauna management is outlined within section 8.2 of the closure plan.

During the execution of reclamation and rehabilitation activities the inclusion of species known to act as an important food source and promote the establishment of habitat suitable for Woylie and Chuditch must continue. To ensure this standard is maintained NBG will ensure that all future seed mixes contain a composition of Gastralobium species reflective of the landform begin rehabilitated.

Historic seed mixes used in rehabilitation at NBG have always incorporated species of *Gastralobium* within the mix ensuring the past rehabilitation also has the ability to support Chuditch and woylie movements back into these areas.

7.1.13. Establishment of Offset's

Within approval conditions associated with both the Federal and State approvals, NBG is required to undertake a range of offsets, designed at compensating the impact to the environment to be caused by the proposal. This includes residual impacts potentially caused to terrestrial fauna.

The offsets required to be provided by NBG included the establishment of +2000ha conservation covenant, restoration of Hotham Farm and the exchange of private and state owned land to compensate impacts to State Forest. Once established, NBG will have obligations regarding the ongoing management of the offsets which will aim to sustain and where possible enhance terrestrial fauna populations within the offset boundaries.

7.2. System Controls

7.2.1. Education and Awareness

All workers at NBG undertake a work place induction relevant to the level of risk and/or duration of work they will be undertaking. There are 3 levels of induction which lead to an individual being classified as a Visitor, Short Term or Fixed Term Worker. Only a Fixed Term worker is permitted to work unsupervised which includes their travel onto and around the project site.

All Fixed Term Workers are required to undertake a 1 day induction prior to commencing work at NBG. It is a requirement of federal approval conditions that as a minimum this induction include information on activities/actions that may result in a direct or indirect impact on these

species. The following paragraph outlines those activities/topics currently included within the induction which fall under this criteria.

Within this induction workers are presented with a Sustainability and External Relations component which includes topics including but not limited to:

- Threatened, Endangered and/or Listed species Identification and Awareness with a focus on Woylie, Chuditch and Black Cockatoos;
- Forest Disease Management;
- Environmental Disturbance (Clearing) protocols and procedures;
- General Fauna Management requirements;
- Procedures for injured fauna; and
- Prohibition of plants, pets and firearms on the project site.

As outlined within Section 5.3 the risks discussed within the induction address both those activities which have both a direct and indirect impact on the species. As a minimum, the induction is reviewed on an annual basis to ensure currency and applicability and is presented by NBG personnel who are considered “subject matter experts” on the topics being presented.

In addition to the site induction, targeted education and awareness programs will be undertaken with those involved with major program and projects to ensure an adequate awareness of project specific biodiversity considerations is understood before commencing work. These packages are further supported by visual materials placed in work areas to aide workgroups in identifying specific flora and fauna species.

Within both the induction and targeted awareness session’s employees and business partners (contractors) are advised of the requirement to report all sightings, interaction and/or mortalities involving Woylie and Chuditch within the project site to the Environment department who maintain a record of observations.

In addition to regular/scheduled training and awareness specific information is periodically distributed across the site to raise the profile of certain flora and fauna species. Generally this information focuses on state or federally listed species that require a higher level of protection or awareness at the site.

7.2.2. EPBC Act Recovery Plans – Chuditch (Department of Environment and Conservation, 2012).

The Chuditch Recovery Plan has been written to reduce threats to chuditch and increase population densities to ensure long-term survival. When considering terrestrial fauna management NBG must align its activities with the recovery plan where possible.

This Chuditch Recovery Plan will be deemed successful if the chuditch can be delisted from the vulnerable category under the EPBC Act and Schedule 1 under the WA Wildlife Conservation Act within 10 years from adoption.

Recovery actions outlined within the plan include:

1. Retain and improve habitat critical for survival
2. Determine impacts of feral cats on Chuditch;
3. Determine the impact of feral cat control methods on Chuditch;
4. Continue, expand and improve baiting foxes and feral cats
5. Determine population abundance and distribution of Chuditch populations;

6. Establish reference sites for monitoring Chuditch population abundance to evaluate the effectiveness of fox and cat control

7. Undertake and monitor translocations to increase the extent of occurrence

8. Increase public awareness through community education and enforcement of regulations; and

9. Coordinate recovery implementation

For more detail please refer to the recovery plan available on the DotE website (www.environment.gov.au).

7.2.3. EPBC Act Recovery Plans – Woylie (Yeatman, G.J. and Groom, C.J., 2012).

The Woylie Recovery Plan has been written with two main long term objectives.

1. Maintain current distribution and abundance across its current range.
2. Increase abundance and range by reducing the impacts of processes that are causing species decline and by establishing new wild populations in suitable habitat within the species former range.

This Recovery Plan will be deemed successful if:

1. the four indigenous populations in southwest WA are maintained (as measured by trap success ≥6% or a suitable alternative population measure) with retention of at least 95% of current genetic diversity); and,

2. the reintroduced and captive populations in WA, SA and NSW are maintained (as measured by trap success ≥6% or a suitable alternative population measure); and,

3. at least four new self-sustaining populations are established through translocations; and

4. the conservation threat ranking of the woylie improves sufficient for it to be classified as a Vulnerable species within ten years.

Recovery Actions within the life of this Recovery Plan

1) Verify the causes of the decline and suppression of recovery and implement remedial action to address these.

2) Minimise predation by introduced foxes and cats at priority sites.

3) Maintain or improve the health, genetic diversity, relative value and viability of wild populations.

4) Maintain genetic diversity of the insurance captive populations at least at 2012 levels.

5) Maintain captive population sizes sufficient to act as source populations for future translocations.

6) Undertake targeted translocations as re-introductions (and as introductions where necessary) to achieve an enhanced conservation status for the species.

7) Inform and educate the community about, and involve the community in, the recovery actions required to conserve the woylie.

For more detail please refer to the recovery plan available on the DotE website (www.environment.gov.au).

7.2.4. EPBC Act Threat Abatement Plans – Feral Cat (DEWHA, 2008a).

The goal of the feral cat Threat Abatement plan (TAP) is to minimise the impact of feral cats on biodiversity in Australia and its territories by:

1. protecting affected native species and ecological communities, and
2. preventing further species and ecological communities from becoming threatened.

To achieve this goal, the plan has five main objectives:

1. prevent feral cats occupying new areas in Australia and eradicate feral cats from high-conservation-value 'islands'

2. promote the maintenance and recovery of native species and ecological communities that are affected by feral cat predation

3. improve knowledge and understanding of feral cat impacts and interactions with other species and other ecological processes

4. improve effectiveness, target specificity, humaneness and integration of control options for feral cats, and

5. increase awareness of all stakeholders of the objectives and actions of the TAP, and of the need to control and manage feral cats.

For more detail refer to the threat abatement plan available on the DotE website (www.environment.gov.au).

7.2.5. EPBC Act Threat Abatement Plans – Red Fox (DEWHA, 2008b).

The goal of this TAP is to minimise the impact of foxes on biodiversity in Australia and its territories by:

1. protecting affected native species and ecological communities, and
2. preventing further species and ecological communities from becoming threatened.

To achieve this goal, the plan has five main objectives:

1. prevent foxes occupying new areas in Australia and eradicate foxes from high-conservation-value 'islands'

2. promote the maintenance and recovery of native species and ecological communities that are affected by fox predation

3. improve knowledge and understanding of fox impacts and interactions with other species and other ecological processes

4. improve the effectiveness, target specificity, integration and humaneness of control options for foxes, and

5. increase awareness of all stakeholders of the objectives and actions of the TAP, and of the need to control and manage foxes.

For more detail refer to the threat abatement plan available on the DotE website (www.environment.gov.au).

7.2.6. EPBC Act Threat Abatement Plans – Feral Pig (DEH, 2005)

The Threat Abatement Plan has two broad goals:

1. To protect listed threatened native species and ecological communities from the impact of pigs

2. To prevent the impact of pigs from causing further species and ecological communities to decline so that they become eligible to be listed as threatened.

To achieve this goal, the plan has five main objectives:

1. To prevent feral pigs from establishing in areas where they are currently do not occur or are in low eradicable numbers, and where they are likely to pose a threat to biodiversity; especially where they would impact on nationally listed threatened species and ecological communities.
2. To integrate feral pig management plans and their implementation into natural resource planning and investment at the regional, state and territory, and national level through consultation and liaison with key stakeholders
3. To increase awareness and understanding of land managers and the general community about the damage feral pigs cause and management options
4. To quantify the impacts feral pigs have on biodiversity (especially nationally listed threatened species and ecological communities) and determine the relationship between feral pig density and the level of damage.
5. To improve the effectiveness, efficiency and humaneness of techniques and strategies for managing the environmental damage due to feral pigs.

For more detail refer to the threat abatement plan available on the DotE website (www.environment.gov.au).

7.3. Behavioural Controls

There are no specific behavioural controls applicable to the management of terrestrial fauna at NBG.

Personal are encouraged to utilise the established NBG or business partner behavioural interaction tools (referred to as Safety Interactions) which involves a conversation between peers whereby positive behaviours are re-enforced and non-conforming behavior corrected. Potential observations regarding Terrestrial Fauna management could include;

- Handling fauna
- Failure to follow established traffic management controls
- Feeding fauna

7.4. Contract Management (Business Partners)

A comprehensive process has been established within the NBG Integrated Management System (IMS) addressing the management of contractors who provide either goods or services to NBG. Within this system the SER department undertakes reviews of both scopes of works and tender documentation prior to the commencement of a contract which has the potential to impact or benefit the environment or surrounding communities.

The following list outlines suggested conditions or topics that are included within contracts where relevant to the contracted works being undertaken. Where possible these conditions should be linked to KPI's, measured to assess a business partners environmental performance at the operation.

- Report all observations of Woylie and/or Chuditch to the principals environment department;
- Reporting of all incidents (including wildlife mortalities (most notably Woylie and/or Chuditch) to the principal;
- Requirement to attend the appropriate induction prior to commencing work onsite;
- Requirement to only enter parts of the property where approval has been granted; and

- The Prohibition of pets and firearms onsite.

Where it is identified that a business partner's activity may have a specific impact on terrestrial fauna, contract conditions must be established to address the activity. Business Partners who are involved within the harvesting or clearing of land must have contract conditions focused on the risks associated with their activity. This includes the completion of a targeted training and awareness program prior to the commencement of works, outlining the potential hazards and risks associated with their work activity and the management controls that exist.

These will include but are not limited to:

- Field Marking and identification procedures (Flagging);
- Environmental Disturbance Form requirements;
- Forest Disease;
- Fauna Awareness and reporting;
- Legal Requirements Awareness; and
- Incident/Accident Reporting

8. PREDICTED OUTCOMES

Table 4 below formed a component of the Summary of environmental impact assessment of key environmental factors as presented within the executive summary of the Public Environmental Review (PER) document submitted for the Life of Mine Extension Project.

This table summarises the predicted outcomes on terrestrial fauna as a result of the implementation of the proposal.

Table 4: Predicted Outcomes on Terrestrial Fauna resulting from implementation of the LOM project

EPA objective (from Environmental Scoping Document)	Existing environment	Aspect and potential impact (from Environmental Scoping Document)	Impact assessment	Environmental management	Predicted outcome on relative conservation values	Compliance with objective
Terrestrial fauna						
To maintain the conservation status, diversity and productivity of fauna and its habitat at species and ecosystem levels through the avoidance or management of adverse impacts and improvement in knowledge.	Eleven dominant fauna habitat types have been identified, based on vegetation and flora surveys conducted to date. The 2011/2012 surveys (Ninox 2012a, 2012b) recorded 11 species of native mammals, 11 frog species, 28 species of reptile and 59 species of native birds. Three introduced species were recorded in the 2011/2012 survey including the Laughing Kookaburra (*Dacelo noveaguineae*), House Mouse (*Mus musculus*) and Pig (*Sus scrofa*). In total, 21 conservation significant terrestrial vertebrate fauna species are currently listed as potentially occurring in the area. These species consist of ten mammals, nine birds (including five migratory species) and two reptiles. All three species of black cockatoo that occur in southwestern Australia (Baudin's Black-Cockatoo, Carnaby's Black-Cockatoo and Forest Red-tailed Black-Cockatoo) have been recorded foraging within the Development Envelope. Carnaby's Black-Cockatoos and Forest Red-tailed Black-Cockatoos are also known to breed within the area (Lee et al. 2012a). Aquatic fauna sampling of watercourses in the vicinity of the Proposal have recorded 111 macroinvertebrate taxa, five native freshwater fish species, two species of native crayfish, two introduced species of fish and one introduced freshwater crayfish (WRM 2011, 2012a, 2012c). A total of 69 identifiable species of invertebrate fauna were recorded during the 2011 survey, of which 24 were considered to be potential Short Range Endemic (SRE) species (Outback Ecology 2012a).	**Clearing of vegetation** would result in loss or fragmentation of fauna habitat and consequential displacement of fauna. **Death or injury of fauna** may occur during clearing and construction.	The Proposal will require clearing of up to 1755 ha of native vegetation within the total additional footprint of up to 2895 ha. All habitat types are well represented outside the Development Envelope with no more than 20% of the Survey Area of any one habitat type proposed to be cleared. Therefore, all fauna habitats will continue to be well represented in the local area and no local extinctions would be expected as a result of the Proposal. The Proposal has potential to increase isolation of the habitat to the east of the Development Envelope and thus affecting the long-term viability of fauna populations in this area. However, the area to the east is substantial in size (Figure ES2) and of good quality and the impact can be mitigated by providing adequate corridors to habitat to the north and west of the operation. Linkages to be maintained include the forested areas between the existing mine pit and RDA. Some roads and pipelines transverse the area, but sufficient habitat exists to act as an effective corridor for small and medium fauna. The second linkage is between the existing RDA and the proposed RDA (construction to commence around 2022) where a 170 m wide band of native vegetation will be maintained between the two RDAs, although this linkage will also be crossed by a road and pipeline. No significant residual impact on the majority of species of conservation significance is expected, with exception of the Carnaby's Black-Cockatoo, Baudin's Black-Cockatoo and the Forest Red-tailed Black-Cockatoo. NBGPL have determined that offsets are required to address significant residual impacts on the Black-Cockatoo species. The offsets package has also taken into account the potential for fragmentation of Chuditch and Woylie habitat.	The potential impacts associated with the Proposal will be managed and mitigated through the implementation of the Black-Cockatoo Management Plan and Terrestrial Fauna Management Plan. Key measures in the Terrestrial Fauna Management Plan include: • providing information to all employees and contractors (through the site induction process) on fauna management requirements (e.g. speed limits, how to manage injured fauna etc.) • installing relevant signage on roads and entry points to the mine noting presence of fauna and the reporting of any impact through a formal process • conduct fauna trapping and relocation prior to areas being cleared • implementing a phased clearing approach for area required to be cleared • ensure all access roads are clearly signposted with speed limits • conduct regular spot checks of vehicle speed in and around the Development Envelope • displaying maps and photographs of fauna in the workplace to raise awareness and facilitate identification and on-the-ground management • report all observations of conservation significant fauna to the Site Environmental Department who will maintain records • giving native animals encountered on-site the opportunity to move on if there is no threat to personnel safety in doing so • if sick or injured animals are encountered, contacting local carers to assess possible rescue and rehabilitation of the animal • ensuring food waste is not accessible to attract native fauna or feral animals • prohibiting pets and firearms on the NBG leases • ensuring some connectivity between the eastern and western vegetated areas of the mine site through implementing fauna access and egress ability across roads and pipelines, and/or undertaking periodic trapping and relocation of fauna • reporting all observations of feral animals to the Site Environmental Department who will maintain records • restricting access to NBGPL–owned property for apiarists • controlling feral pigs, cats and foxes in and around the mine site.	1. Vegetation clearing will affect up to 1755 ha of native vegetation, which will reduce the extent of available fauna habitat in the local area but will not have a significant effect on regional fauna habitat availability as the habitat types within the Development Envelope are widespread and well represented in the large areas of Jarrah forest to the west of the Development Envelope. 2. Further fragmentation of habitat to the east of the Development Envelope and increased monitoring and management of the remaining east–west linkages to maintain connections that will allow genetic mixing and recolonisation potential in the event of a fire or disease. 3. Clearing of up to 1755 ha of black cockatoo habitat which is utilised as foraging habitat for all three species of black cockatoo and breeding habitat for Carnaby's Black-Cockatoo and Forest Red-tailed Black-Cockatoos; rehabilitation will be targeted at providing appropriate foraging species for black cockatoos and eventually providing additional habitat trees. 4. No significant increase in vehicle strike of individual fauna as a result of the Proposal.	After the application of mitigation measures, the Proposal is expected to meet the EPA objective for fauna.

EPA objective (from Environmental Scoping Document)	Existing environment	Aspect and potential impact (from Environmental Scoping Document)	Impact assessment	Environmental management	Predicted outcome on relative conservation values	Compliance with objective
5. Matters of National Environmental Significance						
The EPBC Act objectives are to: • provide for the protection of the environment, especially Matters of National Environmental Significance (MNES) • promote ecologically sustainable development through the conservation and ecologically sustainable use of natural resources.	Previous surveys, the DSEWPaC Species Profile and Threats (SPRAT) database (DSEWPaC 2013) and literature searches have identified seven Threatened fauna species, one Threatened flora species and five Migratory bird species listed under the EPBC Act that may occur in the Development Envelope. Of the 13 EPBC Act listed species identified as potentially occurring in the area, six have been recorded on or near the mine site. These species include: Birds: • Forest Red-tailed Black-Cockatoo: Vulnerable • Baudin's Black-Cockatoo: Vulnerable • Carnaby's Black-Cockatoo: Endangered • Rainbow Bee-eater – Migratory • Mammals: • Brush-tailed Bettong (Woylie) – Endangered • Chuditch – Vulnerable. The other seven species of MNES are considered unlikely to be present in the Boddington area.	**Clearing of vegetation** resulting in the loss or fragmentation of fauna habitat and consequent displacement of fauna **Vehicle and heavy machinery movements** during clearing and construction may result in fauna strike causing injury or death to individuals.	1. Clearing of up to 1755 ha of black cockatoo habitat which is utilised as foraging habitat for all three species of black cockatoo and breeding habitat for Carnaby's Black-Cockatoo and Forest Red-tailed Black-Cockatoos. 2. Rehabilitation will target appropriate foraging species for black cockatoos and eventually providing additional habitat trees. 3. Loss of suitable Chuditch habitat causing displacement of some individuals to surrounding Jarrah forest. 4. Some loss of potential Woylie habitat through clearing of suitable habitat types within the Development Envelope. 5. Further fragmentation of habitat to the east of the Development Envelope and increased monitoring and management of the remaining east–west linkages to maintain connections that will allow genetic mixing and re-colonisation potential in the event of a fire or disease. 6. Potential loss of, or injury to, individual fauna due to vehicle strike during clearing and construction; no significant increase in vehicle strike of l fauna during the operational phase of the project. 7. No significant impact to Rainbow Bee-eaters given the wide distribution of the species and its ability to utilise a wide variety of habitats.	The potential impacts associated with the Proposal will be managed and mitigated through the implementation of the Black-Cockatoo Management Plan and Terrestrial Fauna Management Plan. Key measures in the Black-Cockatoo Management Plan include: • providing information to all employees and contractors (through the site induction process) on Black cockatoos and any other factors that may have a direct or indirect impact on populations • avoiding clearing during breeding seasons • installing and maintaining drinking points near known breeding and feeding areas • maintaining water bodies (i.e. D1 WSR) of higher water quality on the site (these are naturally more attractive to the birds than the RDAs) • complying with the ICMC and commitment to remove cyanide to ensure no impact to black cockatoos should they drink from F1 RDA and new RDA • utilising Wildlife Observers to monitor wildlife accessing F1 RDA and new RDA • minimising high noise levels near habitat trees during breeding seasons • ensuring food plant and hollow-producing tree species are used in rehabilitation seed mixes • clearly demarcating areas to be retained for conservation (i.e. protected from mining activities) to ensure the habitat remains of high quality for black cockatoos • investigating the benefit of using artificial nest hollows in remnant forest areas.	1. Clearing of up to 1755 ha of black cockatoo habitat which is utilised as foraging habitat for all three species of black cockatoo and breeding habitat for Carnaby's Black-Cockatoo and Forest Red-tailed Black-Cockatoos; rehabilitation will be targeted at providing appropriate foraging species for black cockatoos and eventually providing additional habitat trees. 2. Minor increased fragmentation of the 5000 ha of vegetation to the east of the Development Envelope and increased monitoring and management of the remaining east–west linkages to maintain connections that will allow genetic mixing and recolonisation potential in the event of a fire or disease in this eastern area that could affect local populations. 3. Clearing of up to 1755 ha of native vegetation, which will reduce the extent of habitat available to fauna including Chuditch and Woylies in the local area but will not have a significant effect on regional fauna habitat availability. Habitat types within the Development Envelope are widespread and well represented in the large areas of Jarrah forest to the west of the operation.	After the application of mitigation measures, the Proposal is expected to meet the EPBC objectives for MNES.

9. RESPONSIBILITIES

The NBG SER department is responsible for the implementation of this plan. Where support is required for specific controls outlined within the plan this will be sourced on a case by case basis.

10. MONITORING

Table 5: Terrestrial Fauna Management Monitoring Activities

Task	Parameter	Related Procedures	Frequency	Responsibility
Presence of threatened species	Monitor the project area for presence of threatened fauna through opportunistic sightings	Site Induction	Opportunistically	All personnel
Presence of introduced species	Monitor the project area for introduced fauna species	Site Induction	Opportunistically	SER Department
Waste Disposal Access	Monitor waste disposal areas to assess is waste disposal areas are being accessed by animals	Inspection Program	Monthly	SER Department
Fauna entrapment	Check facilities where potential entrapment of fauna could occur	Inspection Program	Opportunistically	SER/Processing Departments
Camera Trapping	Monitor the project area for presence of threatened fauna through noninvasive techniques	Consultant direction	Prior to land clearing	SER Department
Fauna death and protection	Review fauna death and injury data collected across site, particularly haul roads, to ensure fauna populations are being protected.	Nil	Periodically, annually as a minimum	SER Department
Forest Disease Mapping	Measure the potential spread of forest disease boundaries within the project area	Weed and Disease Monitoring and Management Plan	3 yearly	SER Department / Contractor
RDA watering points	Ensure adequate water alternatives are available to dissuade animals from entering RDA	Cyanide Code	Monthly	SER Department / Contractor

11. REPORTING

11.1. Legal (External)

Federal Reporting - EPBC 2012/6370

EPBC Act Approval 2012/6370 requires;

- Condition 3 – Publish a report on the company website outlining compliance with the approval. This includes compliance with Condition 12, requiring development and approval of a Terrestrial Fauna Management Plan.
- Condition 12 (g) - all Woylie or Chuditch mortalities which occur within the NBG project area must be reported to the NBG Environment department and reported annually within the Annual Compliance Report submitted to the Federal Environmental regulator.

State Reporting

Within Western Australia (WA), DPaW maintain an animal report form (Appendix 2) for recording observations of threatened and priority animal species, other specially protected animals, and migratory birds protected under international agreement (including mortalities). It may also be used to record unusual observations of common animals, such as where an animal is found outside of its usual range. All species captured under this requirement are outlined within Schedules 2 – 4 within the *Wildlife Conservation Act, 1950*.

Those species of terrestrial fauna listed within these schedules that could potentially occur within the project area are outlined

Table 2.

DMP Annual Environmental Report

Although not a legal requirement, NBG presents information on fauna management and studies within its AER submitted to the DMP (submitted to all BGMEMLG members).

11.2. Internal

All fauna mortalities which occur within the project area as a result of operational activities must be reported to the SER department. Each mortality event is recorded within the site Incident Management System (Cintellate) and where appropriate investigated.

It is a requirement of Federal approval 2012/6370 that all observations of Woylie and/or Chuditch including those which result in injury/death are reported to the Environmental department immediately. All such occurrences are to be reported in the annual compliance report.

A summary of these events is reported in the Annual Environmental Report (AER) which is provided to all State regulators as well as internally within Newmont's Data Acquisition Workbooks.

In addition to the formal reporting outlined above, employees and business partners are encouraged to report all sightings of weeds, indicators of forest diseases, injured or stressed fauna and feral animal sightings to the environment department who will undertake further action based on the report.

12. CONTINGENCY PLAN

Contingency actions have been developed if monitoring indicates that environmental objectives and targets for terrestrial fauna management for the proposal are not being achieved. These actions have been outlined within Table 6.

Table 6: Contingency Plans for the Management of Terrestrial Fauna

Trigger	Action
Fauna Mortality	1. Inspect animal to determine species, sex, presence of young etc 2. Remove carcass from roads to prevent further mortalities of scavenging animals 3. Report as an environmental incident and include in the AER to inform DPaW
Multiple Occurrences of fauna injury or death from vehicle impacts at a single location(s)	1. Investigate whether location(s) is a fauna corridor 2. If identified as a fauna corridor, erect new or improve existing warning signs and set lower speed limit for that location 3. Review induction material and re-inform personnel of speed restrictions and high-risk areas.
Increase in abundance and/or distribution of feral animals	1. Investigate cause 2. Review control measures and procedures 3. Re-inform all personnel of any changes to control procedures 4. Implement remedial and/or revised control measures.

13. AUDIT AND INSPECTION

There are no specific audits identified with regards to the ongoing management of Terrestrial Fauna however the following audits and inspections are undertaken and contribute to the ongoing management of terrestrial fauna at NBG.

- Condition 4 of EPBC 2012/6370 affords the minster special provisions to request NBG undertake an independent audit of compliance with the conditions of approval and a report submitted to the Minister.
- The internal IMS specifies that each Newmont discipline specific standard is to be audited as a minimum on a 3 yearly basis. The Newmont Biodiversity Management Standard falls under this requirement.
- Field verification inspections are completed upon completion of Environmental Disturbance forms, to ensure all conditions of the internal approval have been met.

14. MANAGEMENT REVIEW

The NBG management review process is focused on the analysis and continual improvement of the operations Integrated Management System. Management review sessions are held each quarter and are attended by the full NBG Management team. The elements of Management review potentially related to terrestrial fauna management include;

- Risk Management
- Audit results
- Compliance with legal requirements
- Analysis of accident/incident trends

15. DEFINITIONS AND ABBREVIATIONS

Term	Definition
AER	Annual Environmental Report
BGMEMLG	Boddington Gold Mine Environmental Management Liaison Group
CALM	Conservation and Land Management (WA)
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
DEC	Department of Environment and Conservation (WA)
DER	Department of Environment and Regulation (WA)
DPaW	Department of Parks and Wildlife (WA)
DotE	Department of the Environment (Federal)
EPA	Environmental Protection Authority (WA)
EPBC	Environmental Protection and Biodiversity Conservation Act, 1999
IMS	Integrated Management System
NMC	Newmont Mining Corporation
NBG	Newmont Boddington Gold
RDA	Residue Disposal Area
SER	Sustainability and External Relations
TAP	Threat Abatement Plan
WRD	Waste Rock Dump
WA	Western Australia

16. RELATED DOCUMENTS

Reference	Title
NBG-SCM-MP-70-11198	Heavy Vehicle Traffic Management Plan
NBG-ENV-MP-70-11186	NBG Waste Management Plan
NBG-ENV-MP-70-14996	NBG Closure Plan
NBG-ENV-MP-70-11201	NBG Black Cockatoo Management Plan
NBG-HSL-PR-70-11724	NBG Road Safety and Light Vehicle Procedure
NBG-ENV-SO-70-11221	NBG Fauna Mortality and Injury
NBG-MIL-SO-70-12438	NBG Removing Dead Fauna Off Access Road
NBG-ENV-FM-70-11251	NBG Wildlife Mortality Report Card
NBG-ENV-SO-70-11215	NBG RDA Wildlife Monitoring
NBG-ENV-FM-70-11244	NBG RDA Wildlife Observations
NBG-ENV-ST-70-11290	NBG RDA Wildlife Mortality Response

Reference	Title
NBG-ENV-FM-70-11243	NBG RDA Wildlife Carcass Observations
NBG-ENV-FM-70-11250	NBG Firearm Approval Form

17. DOCUMENT APPROVAL

Version	Date	Description of Changes	Reviewed By:	Approved By:
1	11/2014	Document Creation	Stephanie Myles	Javier Brodalka

19. REFERENCES

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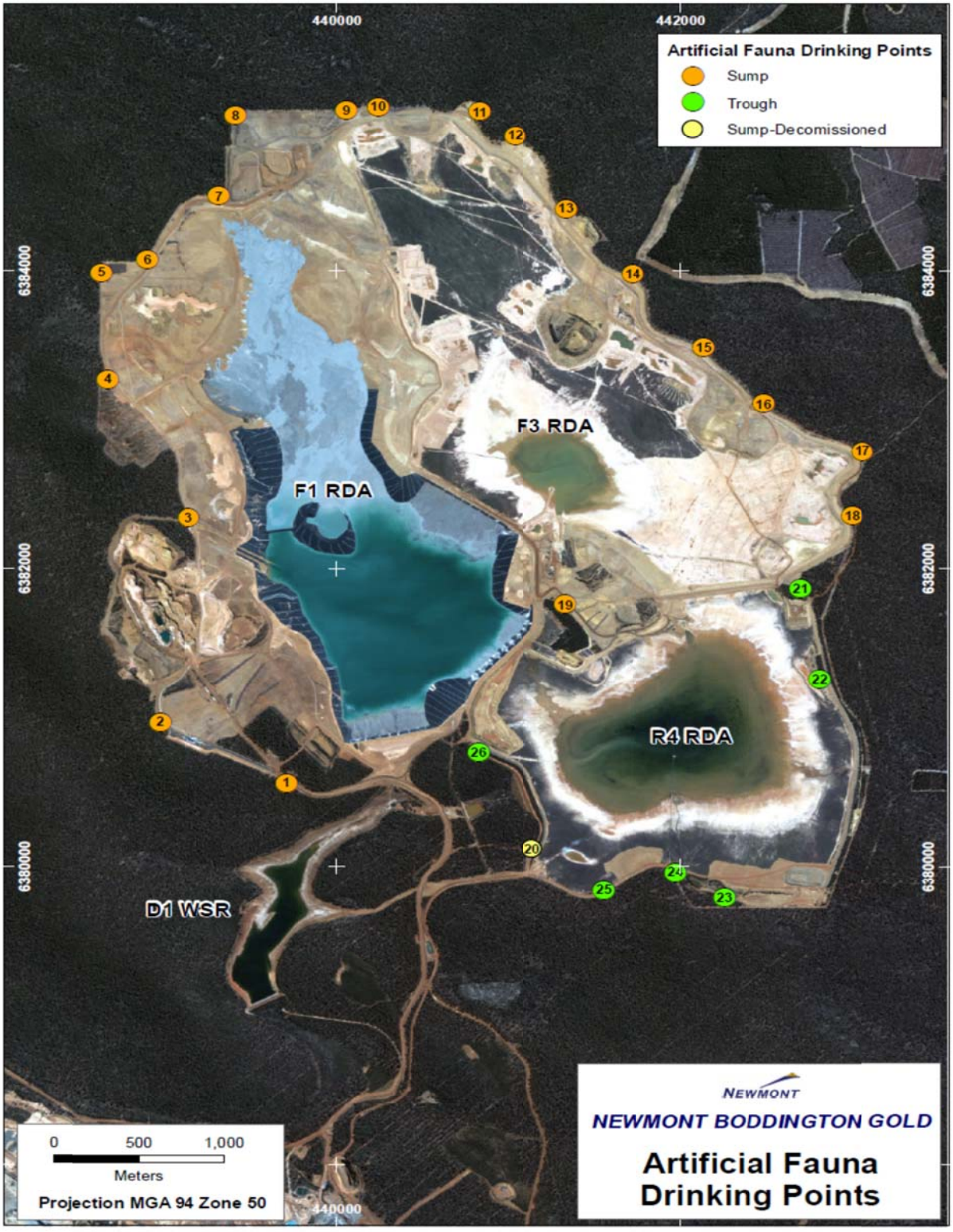
20. APPENDICES

20.1. Appendix 1 - Artificial Fauna Drinking Points located around the RDA perimeter



20.2. Appendix 2 - DPaW Fauna Report Form

Department of Parks and Wildlife

Fauna Report Form

Page 1

Version 3.0 July 2013

SPECIES NAME: _____ **NUMBER SEEN:** _____

OBSERVATION DATE: _____ TIME: _____ am/pm

OBSERVER NAME/S: _____

Organisation / Company: _____

Role / Position / Job title: _____

Address: _____

EMAIL: _____ PHONE: _____

OBSERVATION LOCATION: (i.e. property address, distance to nearest intersection, reserve name, locality, nearest town, distance and direction to that place)

DISTRICT: LGA: Reserve No:

DATUM:	COORDINATE TYPE:	COORDINATE SOURCE:	ACCURACY OF COORDINATES: (±)
GDA94 / MGD94 ☐	Decimal Degrees ☐	GPS ☐	30m ☐ 10km ☐
AGD84 / AMG84 ☐	Degrees Minutes Seconds ☐	Differential GPS ☐	300m ☐ 50km ☐
WGS84 ☐	UTM ☐	Map ☐	1km ☐ 100km ☐
Unknown ☐	(If UTM coords provided, Zone is required)	Google Earth/Maps ☐	
		GIS (i.e. ArcMap) ☐	Specific distance (m):

Latitude/Northing: _____ No. satellites: _____

Longitude/Easting: _____ Map/atlas title: _____

Zone: _____ Map scale: _____

FD Grid Ref: _____ Other: _____

LAND TENURE:

Nature Reserve ☐	State Forest ☐	Private Property ☐	Rail Reserve ☐	Aboriginal Reserve ☐	Shire Reserve ☐
National Park ☐	Timber Reserve ☐	Pastoral Lease ☐	Rd Res. MRD ☐	State Waters <5.4km ☐	Other (Specify) ☐
Conservation Park ☐	Water Reserve ☐	UCL ☐	Rd Res. Shire ☐	Marine Park ☐	

CERTAINTY OF ANIMAL IDENTIFICATION:

Certain ☐ Photo ☐

Moderately certain ☐ Specimen ☐

Not sure ☐ Identified by expert ☐

AGE AND SEX:

Number of Adults:		Number of Sub-adults:		Number of Juveniles:	
Male	_____	Male	_____	Male	_____
Female	_____	Female	_____	Female	_____
Unknown	_____	Unknown	_____	Unknown	_____

Expert name, qualifications, affiliation:

DISTINGUISHING FEATURES / DESCRIPTION OF OBSERVED ANIMAL:

ANIMAL ACTIVITY:

Please return form to:

fauna@dpaw.wa.gov.au

or Species and Communities Branch, Department of Parks and Wildlife, Locked Bag 104, Bentley Delivery Centre WA 6983

Record entered by: _____ *Date entered:* _____ *Database no:* _____

Department of Parks and Wildlife

Fauna Report Form

Version 3.0 July 2013

OBSERVATION TYPE / METHOD: (Select as many as applicable)

Live	Dead	Secondary signs		Historical evidence
Day sighting ☐	Roadkill ☐	Burrow ☐	Hair/fur ☐	Subfossil material ☐
Night sighting ☐	Found shot ☐	Diggings ☐	Skin ☐	Fossil ☐
Dawn sighting ☐	Found poisoned ☐	Tracks ☐	Feathers ☐	
Dusk sighting ☐	Killed by another animal ☐	Scats ☐	Exoskeleton ☐	
Heard ☐	Beach washed ☐	Feeding residue ☐	Snail shell ☐	Living knowledge (verbal) ☐
Caught or trapped ☐	Bones ☐	Nest / mound ☐	Eggs ☐	Historical account (written) ☐
Stranded ☐	Degenerated carcass ☐		Egg shell ☐	
Taken into care ☐	Unknown cause of death ☐			
Released ☐				
Other: (Please specify)	Other: (Please specify)	Other: (Please specify)		Other: (Please specify)

Species specific observation types:

Black cocktoos:	Malleefowl mound:		Other (please specify):
Cockatoo roost ☐	Recent use 'worked' ☐	Estimate of time since activity, mound dimensions etc.	
Cockatoo hollow (natural) ☐	Recent use 'hatched' ☐		
Cockatoo hollow (artificial) ☐	Active (<10 years) ☐		
Artifical hollow constructed of:	Inactive (>10 years) ☐		

REPRODUCTIVE STATE:

Non-breeding ☐	Pregnant ☐	Chewed hollow ☐	Eggs in nest ☐	Not known ☐
Male in breeding colours ☐	Young in pouch ☐	Nest building ☐	Young in nest ☐	Other: (Please specify)
Mating ☐	Lactating ☐	Adult(s) at hollow/nest ☐	Heard young ☐	

Other observation details:

SPECIMEN: (Select as many as applicable)

Collected as voucher ☐	Frozen specimen ☐	Skull / bones ☐	No specimen / not retained ☐
Whole animal ☐	Degenerated specimen ☐	Hair / skin / feather ☐	Other: (Please specify)
Part animal ☐	Spirit specimen ☐	Scats ☐	

Specimen location:

WA Museum ☐	Other Museum / collection ☐	Given to DPaW Office ☐	Retained by collector ☐
WA Museum Catalogue No.	Museum / collection name and Catalogue No.	Please specifiy office location and contact name:	Collectors Reference No.

Specimen identified by (name, qualifications, affiliation etc.):

Please return form to:

fauna@dpaw.wa.gov.au

or Species and Communities Branch, Department of Parks and Wildlife, Locked Bag 104, Bentley Delivery Centre WA 6983

*Record entered by:*_____ *Date entered:*_____ *Database no:*_____

Department of Parks and Wildlife

Fauna Report Form

Version 3.0 July 2013

HABITAT INFORMATION:

LANDFORM:

Cave ☐	Rocky outcrop ☐	Beach ☐	Swamp ☐	Other: (Please specify)
Cliff ☐	Flat ☐	Ocean ☐	Wetland ☐	
Crest ☐	Gully ☐	Creek ☐	Drainage line ☐	
Hill ☐	Sand dune ☐	Lake ☐	Open depression ☐	
Ridge ☐	Slope ☐	River ☐	Closed depression ☐	

VEGETATION TYPE:

Forest ☐	Shrubland ☐	Sedgeland ☐	Garden ☐	Other: (Please specify)
Woodland ☐	Heathland ☐	Rock communities ☐	Orchard ☐	
Mallee ☐	Grassland ☐	Wetland ☐	Plantation ☐	

Associated flora species, ecological communities, and other habitat details:

FIRE HISTORY: **Last Fire:** Season/Month: _____ Year: _____ **Fire Intensity:** High ☐ Medium ☐ Low ☐ No signs of fire ☐

OTHER COMMENTS:

ATTACHED: Map ☐ Mudmap ☐ GIS data ☐ Photo ☐ Field notes ☐ Other:

COPY SENT TO: Regional Office ☐ District Office ☐ Other:

Submitter of record: _____ **Role:** _____ **Date submitted:** _____

Signature: _____ **Organisation:** _____

Contact Details:

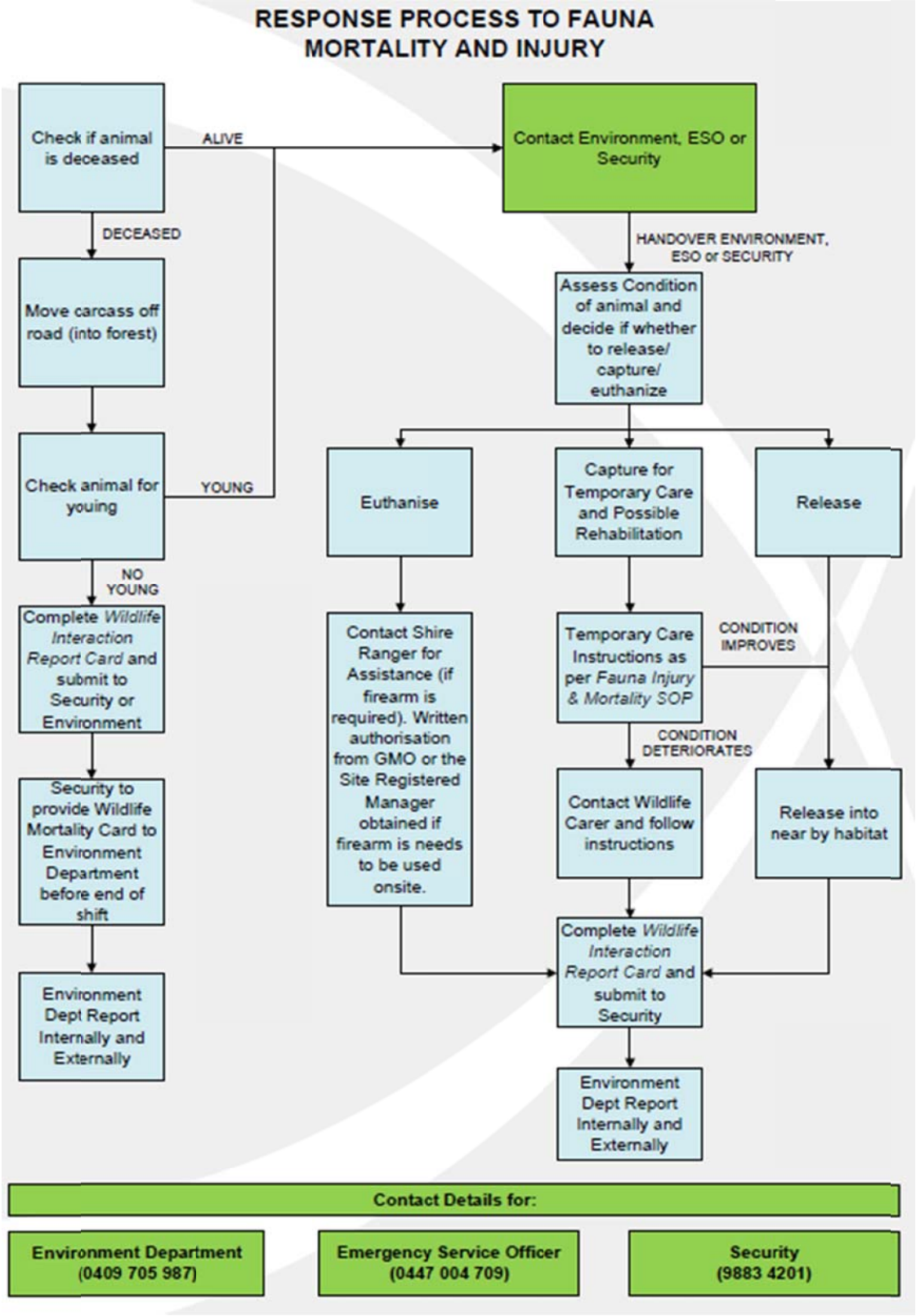
Please return form to:

fauna@dpaw.wa.gov.au

or Species and Communities Branch, Department of Parks and Wildlife, Locked Bag 104, Bentley Delivery Centre WA 6983

*Record entered by:*_____ *Date entered:*_____ *Database no:*_____

20.3. Appendix 3 – NBG Response Process to Fauna Mortality and Injury



20.4. Appendix 4 – Agencies to contact for Fauna rehabilitation

Department of Parks and Wildlife WildCare Helpline

Phone (08) 9474 9055

The WildCare telephone hotline operates 24 hours a day, seven days a week, diverting to afterhours numbers at nights and weekends, to provide immediate assistance.

The Helpline provides a service for the public who find sick, injured or orphaned native wildlife and are seeking advice on where to find care for the animal.

Darling Range Wildlife Shelter

Phone (08) 9394 0885

Kanyana Wildlife Rehabilitation Centre (Inc.)

Phone: (08) 9291 3900

Fax: (08) 9291 0384

120 Gilchrist Rd

Lesmurdie

Western Australia 6076