

Appendix A

Threatened Species Summary

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Threatened Species Information

Red Goshawk *Erythrotriorchis radiatus*, Vulnerable (EPBC & TPWC)

The Red Goshawk is a medium-large sized hawk with rufous-brown streaked plumage. Adult birds have a whitish head with dark streaks. Legs and feet are massive and yellow with bright rufous-red thighs. The underwing and tail are boldly barred. Juvenile birds have redder upperparts, specifically on the head (Debus, 2019).

The preferred habitat of Red Goshawk is tall eucalypt open forest and riparian areas. Territories contain a mosaic of vegetation types so that much of its hunting habitat occurs within ecotones (Hamel, *et al.*, 2008). Territories contain a large diversity and abundance of medium sized birds that are preferred prey. Diet is predominantly birds, with reptiles, mammals and insects occasionally taken (Marchant & Higgins, 1993). Nests are basket-shaped and usually occur in the tallest tree within a stand of tall trees with the nest being constructed on high horizontal branches (Aumann & Baker-Gabb, 1991). Territories are typically very large (200 km²), with pairs rarely nesting within 7 km (Debus & Czechura, 1988).

Habitat loss is the predominant threat to Red Goshawk due to its large territory size and complex habitat requirements (Baker-Gabb, 1998).

Previous modelling of Red Goshawk populations has estimated 1000 breeding birds to occur (Garnett & Crowley, 2000). Of this total approximately one third are believed to occur in the Northern Territory. An estimated 120 mature individuals occur on Melville Island, therefore a significant portion of the estimated total of the Red Goshawk population inhabit the Tiwi Islands (Hamel *et al.*, 2008). Forestry operations on the Tiwi islands are estimated to have reduced the population by 10% (Woinarski *et al.*, 2000).

Grey Falcon *Falco hypoleucos*, Vulnerable (TPWC)

The Grey Falcon is a medium-sized pale falcon with light blue-grey upperparts, darker blue-grey wings, a barred tail and black wing-tips. The bill is grey and the cere, eye-ring and legs are bright yellow (Ward, 2012a).

Grey Falcon habitat typically consists of lightly timbered lowland plains on inland drainage systems with low rainfall. Prey consists mostly of birds, especially parrots and pigeons (Ward, 2012a). The species has not been recorded breeding in tropical or equatorial (Tiwi Islands) savannas, with the northern-most breeding event recorded occurring at approximately 16°30" latitude (Schoenjahn, 2013). Some birds may migrate to northern Australia during winter (Debus, 2019).

Threats to Grey Falcon are not fully understood. Land clearing for agriculture has probably contributed to declines in the south and east of its range, while landscape-scale changes due to changed fire regimes and grazing may impact the species in the Northern Territory (Ward, 2012a).

The population of the species is estimated to be in the order of 500 pairs (Garnett *et al.*, 2011). Grey Falcon qualifies for listing as Vulnerable in the NT due to a population of less than 1000 (Ward, 2012a).

Partridge Pigeon (Eastern subspecies) *Geophaps smithii smithii*, Vulnerable (EPBC & TPWC)

The Partridge Pigeon is a grey-brown, medium-sized ground-dwelling pigeon. It has a conspicuous white leading edge on its wing and red bare skin on the face.

Partridge Pigeon habitat typically consists of lowland eucalypt open forests and woodlands with grassy understoreys. It forages in open areas, often recently burnt, and nests in sites with dense grass cover. Diet consists mostly of seeds from grasses and woody plants. The species nests on the ground during the early dry season (Hamel *et al.*, 2008). Partridge Pigeon is mostly sedentary, though it can make large-scale movement of up to 10 km in response to seasonal variations in water and food availability (Fraser, 2001).

The preference for dense grass cover as a nesting site indicate that Partridge Pigeon is affected by fire regimes. Changes in grass cover and frequent fires are the main threats to the species (Garnett & Crowley, 2000).

The population of Partridge Pigeon is estimated at between 10,000 and 15,000 individuals (Garnett & Crowley, 2000). Anecdotal evidence indicates that the species remains abundant on parts of the Tiwi Islands, with an estimated population size of 1,464 individuals on Melville Island (Hamel *et al.*, 2008).

Grey Falcon has been recorded once on Bathurst Island; however, the species typically occurs in arid and semi-arid environments and does not breed in tropical climates (Debus, 2019; Schoenjahn, 2013).

Horsfield's Bushlark (Tiwi subspecies) *Mirafra javanica melvillensis*, Critically Endangered (EPBC)

The Tiwi subspecies of Horsfield's Bushlark, also known as the singing Bushlark, is a small squat lark with a short robust bill and a rounded head. The top of the head and neck appear black, with rufous streaks and a distinct pale buff eyebrow. The upperparts are mottled brownish grey with rufous edges and a rufous wing. Underparts are pale cream-rufous with dark streaking on the breast and legs are short (Ward, 2012b).

The subspecies occurs on treeless plains dominated by Acacia open shrubland with perennial Sorghum understorey. It is most abundant in perennial tussock grasslands of moderate height and density. It is less abundant in tall dense grasslands, becoming less abundant as tree cover increases. Horsfield's Bushlark forages on the ground, feeding on seeds, insects and other invertebrates. Nests are laid on the ground beneath a tussock of grass, sedge or small shrub (Ward, 2012b).

Threats to the subspecies are not fully known, and it may have naturally low numbers. Altered fire regimes are a potential threat, specifically less frequent and more extensive fires resulting in the spread of invasive weeds and denser grass cover. Another potential threat is feral animals such as Water Buffalo (*Bubalis bubalis*) and Pigs (*Sus scrofa*) that can degrade habitat by reducing grass density (Garnett *et al.*, 2011).

The most intensive survey recorded the subspecies in two sites out of a total of 351 sites (Woinarski *et al.*, 2003a). The subspecies qualified as Vulnerable due to a population size of less than 1,000.

Masked Owl (Tiwi subspecies) *Tyto novaehollandiae melvillensis*, Vulnerable (EPBC & TPWC)

The Masked Owl is a large robust owl. It has the distinctive features of a *Tyto* owl, including dark eyes, a well-developed facial disk, moth-like plumage and pale bill (Debus, 2009). The Tiwi subspecies is lighter and smaller than the subspecies that occur in the south-west and south-east of Australia. It is most likely to be identified by loud screeching and complex whistling calls (Woinarski & Ward, 2012a).

The Masked Owl occurs in tall open forests, particularly those dominated by *Eucalyptus miniata* and *E. tetradonta*, and often roosts in monsoon rainforest during the day (Woinarski & Ward, 2012a). On Melville Island it has been observed roosting in *Acacia mangium* forestry plantations. Mammals up to the size of possums are the main prey. On the Tiwi Island the subspecies has been recorded to prey on Black-footed Tree-rat (*Mesembriomys gouldii melvillensis*), Northern Bandicoot (*Isodon macrourus*), Pale Field Rat (*Rattus tunneyi*), Brush-tailed Rabbit-rat (*Conilurus penicillatus*) and Butler's Dunnart (*Sminthopsis butleri*) (Indicus, 2007; 2008).

There is evidence that the subspecies prey base of small and medium sized mammals is declining, which would reduce the population (Davies *et al.*, 2018). Imposed fire regimes by forestry operation to protect plantations may impact the subspecies. Feral animals such as pigs, water buffalo and horses can also impact Tiwi Masked Owl by altering habitat structure (Woinarski & Ward, 2012a).

The population size of the subspecies has been estimated at 1,000 mature individuals occupying an area of 500,000 ha (Garnett *et al.*, 2011). Forestry operations are estimated to have reduced the population by 5% (Woinarski & Ward, 2012a).

Fawn Antechinus *Antechinus bellus*, Endangered (EPBC), Vulnerable (TPWC)

The Fawn Antechinus is a small (30-60 g) dasyurid with pale to medium grey-brown fur above with a white chin and feet, and a pale eye-ring. The tail is brown (Young, 2012).

The species is both terrestrial and arboreal and is active at dawn and dusk. Prey primarily consists of insects. It shelters in hollows and tree logs and shows a preference for areas with less frequent fires (Young, 2012).

The decline of Fawn Antechinus in the is likely related to inappropriate fire regimes affecting habitat suitability and predation by feral cats (Young, 2012).

The species qualifies for listing as Endangered in the NT due to the population decreasing by more than 50% over 10 years, and the causes of this reduction (fire regimes and feral cats) have yet to cease (Young, 2012).

Brush-tailed Rabbit-rat *Conilurus penicillatus*, Endangered (EPBC), Vulnerable (TPWC)

The Brush-tailed Rabbit-rat is a small-medium sized (100-250 g) partly arboreal rodent with a long brush-tipped tail with large eyes and long ears. The fur colour is mostly grey-brown with pale undersides (Woinarski & Hill, 2012; Woinarski *et al.*, 2017).

The preferred habitat of Brush-tailed Rabbit-rat is eucalypt tall open forest and woodland, particularly those dominated by *Eucalyptus miniata* and *E. tetradonta*. It shelters in tree hollows, hollows in logs and occasionally in crowns of pandanus or sand palms. It mostly forages on the ground but is also partly arboreal. The species feeds mostly on seeds, but also fruits, invertebrates, leaves and grass (Woinarski & Hill, 2012).

Broad-scale habitat change may have led to the decline of this species. Changed fire regimes, weeds, livestock grazing, and feral animals may have changed the availability of food resources, such as seeds from particular grasses. Frequent fires can reduce the availability of tree and log hollows, fruit-bearing understorey shrubs and change grass composition. Feral cats are also a threat (Woinarski & Hill, 2012).

The range and population of the Brush-tailed Rabbit-rat has declined significantly since European settlement. The Tiwi Islands likely supports the largest remaining subpopulation of the species (Woinarski *et al.*, 2017). Forestry has reduced the population of the Tiwi subpopulation by removing suitable habitat (Woinarski & Hill, 2012). Recent surveys indicate a further decline, with the species retracting to areas on Melville Island where feral cats are rarely detected and shrub density is high (Davies *et al.*, 2017, 2018).

Black-footed Tree-rat *Mesembriomys gouldii*, Endangered (EPBC), Vulnerable (TPWC)

The Black-footed Tree-rat is a large rodent (up to 830 g), with shaggy grey to black fur on top, pale undersides, large ears and a long hairy tail with a white brush (Hill, 2012).

Black-footed Tree-rat is a relatively solitary nocturnal animal that shelters by day in tree hollows and pandanus stands during the day. The species occurs most commonly in lowland open forests and woodlands dominated by *Eucalyptus miniata* and *E. tetradonta*, particularly when there is a dense shrubby understorey (Woinarski *et al.*, 2014). The diet consists mostly of hard fruit and seeds complemented by grass, invertebrates and nectar rich flowers (Hill, 2012).

Frequent fire regimes are a threat for the species, due to impacts to the availability of tree hollows and the shrubby understorey. Predation by feral cats and fragmentation of suitable habitats are also potential threats (Hill, 2012).

The total population size of the species has been estimated at approximately 10,000 mature individuals (Woinarski *et al.*, 2014). Recent surveys on Melville Island have indicated a reduced trapping success rate of 63% for the subspecies, indicating a pattern of decline similar to what has occurred on the northern mainland (Davies *et al.*, 2018).

Northern Brush-tailed Phascogale *Phascogale pirata*, Endangered (EPBC), Vulnerable (TPWC)

The Northern Brush-tailed Phascogale is a carnivorous marsupial approximately 150-20 g in size with silvery to dark grey fur and long dark hairs on the tail, which form a distinctive brush. The species also has a pointed snout and large eyes (Woinarski & Ward, 2012b).

Most records of the species are from tall open forests dominated by *Eucalyptus miniata* and *E. tetradonta*. It is a nocturnal mammal that feeds in trees and on the ground. Prey is predominantly invertebrates with some small vertebrates taken (Woinarski & Ward, 2012b).

Threats to the species are not fully understood. Habitat loss due to land clearing for forestry has likely reduced populations on the Tiwi Islands. Feral cat predation, poisoning from consumption of toxic Cane Toads and altered fire regimes are other likely threats (Woinarski & Ward, 2012b).

The species was previously thought to be common but may have retracted to less than 2,500 mature individuals. The population is thought to be declining (IUCN, 2011).

Pale Field Rat *Rattus tunneyi*, Vulnerable (TPWC)

The Pale Field Rat is a medium sized rodent with pale brown shiny fur, a tail shorter than its body length, large protruding eyes, pale brown ears and white feet (Young & Hill, 2012).

The species is nocturnal and burrows in burrows during the day. It previously was widespread and found in dense vegetation along creeks and forms loose colonies. Food includes roots, grass stems and seeds (Young & Hill, 2012).

Threats to the species are not fully known but likely include inappropriate fire regimes impacting habitat suitability, and feral cat predation (Young & Hill, 2012).

Pale Field Rat has recorded significant declines in National Parks the Northern Territory. The species is listed as Vulnerable due to a decline of more than 30 % over 10 years (Young & Hill, 2012).

Butler's Dunnart *Sminthopsis butleri*, Vulnerable (EPBC & TPWC)

Butler's Dunnart is a small carnivorous marsupial that is distinguished from other Dunnart species by a lack of rufous markings on its face and hairy hindfeet with distinctive patterning (Ward & Woinarski, 2012).

The favoured habitat of the species is eucalypt open forest and woodland dominated by *Eucalyptus miniata*, *E. tetradonta* and *Corymbia nesophila*. The species also occurs in lower abundance in Melaleuca woodland and the edges of treeless plains. The species shelters under logs and among rocks on the ground. The diet includes invertebrates and possibly some small vertebrates (Ward & Woinarski, 2012).

Land clearing for forestry has reduced the area of occupancy and population of the species on the Tiwi Islands. Ongoing management of plantations could impact the species, including imposed fire regimes to protect plantations and subsequent spread of weeds. Habitat degradation by feral pigs and predation by feral cats are other potential threats to the species (Ward & Woinarski, 2012).

Butler's Dunnart population has declined due to forestry and may have declined further due to the increased abundance of feral cats on the Tiwi Islands. The species qualifies as Vulnerable due to an extent of occurrence of less than 20,000 km², its range being restricted to two islands and likely population declines (Ward & Woinarski, 2012).

False Water Rat *Xeromys myoides*, Vulnerable (TPWC)

The False Water-rat is a small rodent distinguished by its small size, dark grey fur and white belly. The species is actually a mouse and not a rat (DEH, 2003).

False Water Rat occurs in coastal habitats such as mangrove forests, coastal lagoons, swamps and sedge lakes close to lagoons. The species is a nocturnal predator that feeds on marine and freshwater invertebrates, including crabs, snails and molluscs). It forages at night in mangroves on low tides and returns to adjacent sedgeland when the tide rises. Burrows and mounds are built and used for shelter (Woinarski, 2006; DEH, 2003).

Threats to the species are not fully known. The most likely threatening process are broad-scale habitat changes due to saltwater intrusion, spread of weeds and grazing (Woinarski, 2006)

A population assessment is difficult due to a lack of precise information. The species may qualify as Vulnerable due to having an area of occupancy of less than 2,00 km², having no more than 10 known populations and likely experiencing population declines (Woinarski, 2006).

Plains Death Adder *Acanthopsis hawkei*, Vulnerable (EPBC & TPWC)

Death Adders have short, stout, and banded bodies. The head is triangular and distinct from the neck and the tail is slender and tipped with a spine (Ward & Phillips, 2012).

The Plains Death Adder occurs on the flat, treeless cracking-soil plains of northern Australia. Diet mainly consists of frogs, reptiles and rats. They are highly venomous ambush predators that attract prey by using their modified tail-tip to imitate a defenceless insect (Ward & Phillips, 2012).

Poisoning from Cane Toads represents the major threat to the species. Death Adders are adept at attracting Cane Toads and die in large numbers when toads arrive in an area (Ward & Phillips, 2012).

The Plains Death Adder has been listed as Vulnerable due to an observed decrease in population due to a threat that has not abated (Ward & Phillips, 2012). This threat does not occur on the Tiwi Islands due to the absence of Cane Toads.

Death Adder taxonomy is poorly resolved (Wuster *et al.*, 2005). Death Adders are known to occur on the Tiwi Islands. These specimens may belong to a different, undescribed species, or could be a subspecies of the Plains Death Adder.

Mertens' Water Monitor *Varanus mertensi*, Vulnerable (TPWC)

Mertens' Water Monitor is a medium to large sized semi-aquatic monitor which is dark-brown to black on the back, has several cream or dark-yellow spots and has a lower-lip that is yellowish, speckled or barred grey. It has a long tail that is strongly compressed laterally and is used to propel it through the water (Ward *et al.*, 2006).

Mertens' Water Monitor is semi-aquatic and occurs close to water. It feeds mostly on fish, frogs and carrion as well as insects and small terrestrial vertebrates (Ward *et al.*, 2006)

The greatest threat to the species, and cause of population declines, is mortality due to ingestion of Cane Toad toxin.

The species qualifies for listing as Vulnerable due to a population decline of more than 30% over 10 years (Ward *et al.*, 2006). The Tiwi Islands population is likely to have remained relatively stable due to the lack of Cane Toads on the islands.

Yellow-spotted Monitor *Varanus panoptes*, Vulnerable (TPWC)

The Yellow-spotted Monitor is a large robust terrestrial monitor, dark reddish-brown on the back with bands of large black spots and smaller pale-yellow spots. Its tail is compressed laterally with the last quarter pale with narrow dark bands (Ward *et al.*, 2012).

Yellow-spotted Monitor occupies a variety of habitats including coastal beaches, floodplains, grasslands and woodlands. Diet consists mostly of small terrestrial vertebrates and insects (Ward *et al.*, 2012).

Poisoning due to predation of poisonous Cane Toads is the largest threat to the species and the cause of significant population declines. Radio-tracking studies in Kakadu National Park have documented significant declines in the species following the arrival of Cane Toads (Griffiths & Holland, 2004).

The species qualifies for listing as Vulnerable due to a population decline of more than 30% over 10 years (Ward *et al.*, 2012). The Tiwi Islands population is likely to have remained relatively stable due to the lack of Cane Toads on the islands.

Cognate Land Snail *Amphidromous cognatus*, Vulnerable (TPWC)

Amphidromous cognatus is a large camaenid land snail, with a shell length of approximately 21-33 mm in length and diameter of 12-17 mm. The shell has a yellow ground colour with a spiral brown band. The snail's lip is white or faintly yellow (Wilson *et al.*, 2006).

The species occurs in trees in monsoon rainforests (Wilson *et al.*, 2006).

Potential threats to the species include increased fire frequency, feral animal grazing and predation by Cane Toads (Wilson *et al.*, 2006)

The species qualifies as Vulnerable due to an extent of occurrence of less than 20,000 km², an area of occupancy of less than 2,000 km² and likely population declines (Wilson *et al.*, 2006).

Atlas Moth *Attacus wardi*, Vulnerable (TPWC)

Atlas Moth is a large distinctive insect with a wingspan of approximately 17 cm. Colour is rusty-brown with a double-white band a large distinctive spot on each wing (Braby *et al.*, 2006).

The early stages of the moth's life are associated with *Croton habrophyllus* that grows along the edges of large patches of monsoon forest. It is likely restricted to coastal areas and occurs in a minimum patch size of 8 hectares (Braby *et al.*, 2006).

Major threats to Atlas Moth that have led to population declines include clearance of habitat and habitat degradation due to cyclone. Potential threats include inappropriate fire regimes and spread of grassy weeds (Braby *et al.*, 2006).

The species qualifies as Vulnerable due to an extent of occurrence of less than 20,000 km², an area of occupancy of less than 2,000 km² and likely population declines. Two known populations of the species occur on Melville Island near Maxwell Creek and Milikapiti (Braby *et al.*, 2006).

***Cycas armstrongii*, Vulnerable (TPWC)**

Cycas armstrongii is a cycad growing up to 6 m tall. Leaves are between 44 – 94 cm in length and hold between 84 and 156 leaflets. There are separate male and female plants. Male plants disperse pollen from a cone situated on the top of the stem and female plants, when fertilised, produce fruit which hangs from the top of the stem (Flora NT, 2020). This cycad is endemic the Northern Territory and is found growing in the Darwin Region, Coburg Peninsular and the Tiwi Islands where it mainly occurs within well drained open woodlands.

This species is listed as Vulnerable under the TPWC Act. It is locally abundant but given its geography and preferred habitat, large population declines have been projected due to land clearing and changes to fire regime (Kerrigan *et al.*, 2006).

***Typhonium jonesii*, Endangered (EPBC & TPWC)**

Typhonium jonesii is a perennial herb with leaves presenting during the annual wets season from December through to April. A flower emerges around the same time as the leaves and stays open for around a week. The plant is dormant during the dry season when it persists as an underground corm. Leaf blades are deeply trilobed, hastate or auriculate (Flora NT, 2020). This species is endemic to the Tiwi Islands and is found on rocky and lateritic hills overtopped by *Eucalyptus tetrodonta* and *E. miniata* open forest and woodlands.

This species is listed as Endangered under both the TPWC Act and the EPBC Act because it fulfils the following (under criteria B1ab(iii)+2ab(iii); D):

- Known at less than 5 locations
- Less than 250 known mature individuals
- An extent of occurrence less than 5000 km²
- An area of occupancy less than 500 km²
- Impacts from forestry clearing

The main potential impacts for the species are land clearing for forestry, the spread weed grasses including Gamba Grass and Perennial Mission Grass and an increase in fire frequency and intensity (Kerrigan & Cowie, 2006).

***Typhonium mirabile*, Endangered (EPBC & TPWC)**

Typhonium mirabile is a perennial herb having an underground corm. Leaves emerge during the annual wet season, from December through to April and are blue green in colour, orbicular, lanceolate or cordate and held close to the soil surface. The flower is partially buried and appears around the same time as the first leaves, but only persists for a short time (Flora NT, 2020). This species is endemic to the Tiwi Island and is found on lateritic and sandy soils in patches where leaf litter is sparse and along hillslopes and ridges.

This species is listed as Endangered under both the TPWC Act and the EPBC Act because it fulfils the following (under criteria B1ab(iii)+2ab(iii); D):

- Less than 250 known mature individuals
- An extent of occurrence less than 5000 km²


- An area of occupancy less than 500 km²
- Impacts from forestry clearing


The main potential impacts for the species are land clearing for forestry, the spread weed grasses including Gamba Grass and Perennial Mission Grass and an increase in fire frequency and intensity (Kerrigan *et al.*, 2007).


Appendix B


Fauna site summary
tables


Appendix B Fauna site summary tables


Fauna Survey Site 1	
Location	-11.742869147°, 130.659579802°
Trapping dates	January 19 – 21, 2021
Camera dates	January 20 – February 18
Site Description	<i>Eucalyptus oligantha</i> open woodland
	
Trapped Animals	<ul style="list-style-type: none"> • <i>Eremiascincus douglasi</i> • Ornate Burrowing Frog (<i>Platyplectrum ornatum</i>) • Black-footed Tree-rat (<i>Mesembriomys gouldii</i>) • Butler's Dunnart (<i>Sminthopsis butleri</i>)
Fauna recorded on motion-activated camera	<ul style="list-style-type: none"> • Northern Brown Bandicoot (<i>Isodon macrourus</i>) • Black-footed Tree-rat (<i>Mesembriomys gouldii</i>) • Common Brushtail Possum (<i>Trichosurus vulpecula</i>)
Birds	<ul style="list-style-type: none"> • Sulphur-crested Cockatoo (<i>Cacatua galerita</i>) • White-bellied Cuckooshrike (<i>Coracina papuensis</i>) • Yellow-tinted Honeyeater (<i>Lichenostomus flavescens</i>) • White-throated Honeyeater (<i>Melithreptus albogularis</i>) • Dusky Honeyeater (<i>Myzomela obscura</i>) • Helmeted Friarbird (<i>Philemon buceroides</i>) • Northern Rosella (<i>Platycercus venustus</i>) • Varied Lorikeet (<i>Psitteuteles versicolor</i>)

Fauna Survey Site 2	
Location	-11.727851667°, 130.656783333°
Trapping dates	January 19 – 21, 2021
Camera dates	January 21 – February 18
Site Description	<i>Eucalyptus tetrodonta</i> and <i>Eucalyptus miniata</i> tall open forest
	
Trapped Animals	<ul style="list-style-type: none"> • <i>Eremiascincus douglasi</i> • Bynoe's Gecko (<i>Heteronotia binoei</i>) • Ornate Burrowing Frog (<i>Platyplectrum ornatum</i>) • Black-footed Tree-rat (<i>Mesembriomys gouldii</i>) • Delicate Mouse (<i>Pseudomys delicatulus</i>)
Incidental fauna sightings	<ul style="list-style-type: none"> • Northern Brown bandicoot (<i>Isoodon macrourus</i>) • Burton's Legless Lizard (<i>Lialis burtonis</i>)
Motion-activated camera fauna	<ul style="list-style-type: none"> • Black-footed Tree-rat (<i>Mesembriomys gouldii</i>)
Birds	<ul style="list-style-type: none"> • Pied Butcherbird (<i>Cracticus nigrogularis</i>) • Blue-faced Honeyeater (<i>Entomyzon cyanotis</i>) • Yellow-tinted Honeyeater (<i>Lichenostomus flavescens</i>) • Grey-crowned Babbler (<i>Pomatostomus temporalis</i>)

Fauna Survey Site 3	
Location	-11.723565000°, 130.663121667°
Trapping dates	January 19 – 21, 2021
Camera dates	January 20 – February 18
Site Description	<i>Eucalyptus tetrodonta</i> and <i>Eucalyptus miniata</i> tall open forest
	
Trapped Animals	No animals trapped
Fauna recorded on motion-activated camera	<ul style="list-style-type: none"> • Torresian Crow (<i>Corvus orru</i>) • Northern Brown Bandicoot (<i>Isodon macrourus</i>) • Black-footed Tree-rat (<i>Mesembriomys gouldii</i>) • Delicate Mouse (<i>Pseudomys delicatulus</i>) • Pale Field-rat (<i>Rattus tunneyi</i>) • Common Brushtail Possum (<i>Trichosurus vulpecula</i>)
Birds	<ul style="list-style-type: none"> • White-bellied Cuckooshrike (<i>Coracina papuensis</i>) • Torresian Crow (<i>Corvus orru</i>) • Yellow-throated Miner (<i>Manorina flavigula</i>) • Rufous Whistler (<i>Pachycephala rufiventris</i>) • Striated Pardalote (<i>Pardalotus striatus</i>) • Silver-crowned Friarbird (<i>Philemon argenticeps</i>)

Fauna Survey Site 4			
Location	-11.721158333°, 130.670480000°		
Trapping dates	January 16 – 18, 2021	Camera dates	January 16 - February 18
Site Description	<i>Corymbia confertiflora</i> and <i>Erythrophleum chlorostachys</i> low open forest		
			
Trapped Animals	<ul style="list-style-type: none"> • <i>Carlia munda</i> • <i>Carlia rufilatus</i> • <i>Ctenotus hilli</i> • <i>Eremiascincus douglasi</i> • Bynoe's Gecko (<i>Heteronotia binoei</i>) • Ornate Burrowing Frog (<i>Platyplectrum ornatum</i>) • Northern Brown Bandicoot (<i>Isoodon macrourus</i>) • Black-footed Tree-rat (<i>Mesembriomys gouldii</i>) • Pale Field-rat (<i>Rattus tunneyi</i>) • Butler's Dunnart (<i>Sminthopsis butleri</i>) 		
Fauna recorded on motion-activated camera	<ul style="list-style-type: none"> • Northern Brown Bandicoot (<i>Isoodon macrourus</i>) • Black-footed Tree-rat (<i>Mesembriomys gouldii</i>) • Common Brushtail Possum (<i>Trichosurus vulpecula</i>) • Gilbert's Dragon (<i>Lophognathus gilberti</i>) 		
Birds	<ul style="list-style-type: none"> • Red-winged Parrot (<i>Aprosmictus erythropterus</i>) • Pheasant Coucal (<i>Centropus phasianinus</i>) • Brown Honeyeater (<i>Lichmera indistincta</i>) • Dusky Honeyeater (<i>Myzomela obscura</i>) • Helmeted Friarbird (<i>Philemon buceroides</i>) • Forest Kingfisher (<i>Todiramphus macleayii</i>) • Red-collared Lorikeet (<i>Trichoglossus rubritorquis</i>) 		

Fauna Survey Site 5			
Location	-11.684858333°, 130.691390000°		
Trapping dates	January 16 – 18, 2021	Camera dates	January 17 - February 18
Site Description	<i>Eucalyptus tetradonta</i> and <i>Eucalyptus miniata</i> tall open forest		
			
Trapped Animals	<ul style="list-style-type: none"> • <i>Carlia rufilatus</i> • <i>Eremiascincus douglasi</i> • Bynoe's Gecko (<i>Heteronotia binoei</i>) • Northern Territory Frog (<i>Austrochaperina adelphe</i>) • Ornate Burrowing Frog (<i>Platyplectrum ornatum</i>) • Savanna Glider (<i>Petaurus ariel</i>) 		
Fauna recorded on motion-activated camera	<ul style="list-style-type: none"> • Black-footed Tree-rat (<i>Mesembriomys gouldii</i>) • Common Brushtail Possum (<i>Trichosurus vulpecula</i>) 		
Birds	<ul style="list-style-type: none"> • Wedge-tailed Eagle (<i>Aquila audax</i>) • Pied Butcherbird (<i>Cracticus nigrogularis</i>) • White-bellied Cuckooshrike (<i>Coracina papuensis</i>) • Mistletoebird (<i>Dicaeum hirundinaceum</i>) • Spangled Drongo (<i>Dicrurus bracteatus</i>) • Yellow-tinted Honeyeater (<i>Lichenostomus flavescens</i>) • White-throated Honeyeater (<i>Melithreptus albogularis</i>) • Silver-crowned Friarbird (<i>Philemon argenticeps</i>) • Little Friarbird (<i>Philemon citreogularis</i>) • Varied Lorikeet (<i>Psitteuteles versicolor</i>) • Red-collared Lorikeet (<i>Trichoglossus rubritorquis</i>) 		

Fauna Survey Site 6			
Location	-11.690391667°, 130.693683333°		
Trapping dates	January 16 – 18, 2021	Camera dates	January 17 - February 18
Site Description	<i>Eucalyptus tetradonta</i> and <i>Eucalyptus miniata</i> tall open forest		
			
Trapped Animals	<ul style="list-style-type: none"> • <i>Carlia rufilatus</i> • <i>Eremiascincus douglasi</i> • Ornate Burrowing Frog (<i>Platyplectrum ornatum</i>) • Butler's Dunnart (<i>Sminthopsis butleri</i>) 		
Fauna recorded on motion-activated camera	<ul style="list-style-type: none"> • Northern Brown Bandicoot (<i>Isodon macrourus</i>) • Agile Wallaby (<i>Macropus agilis</i>) • Black-footed Tree-rat (<i>Mesembriomys gouldii</i>) • Common Brushtail Possum (<i>Trichosurus vulpecula</i>) 		
Birds	<ul style="list-style-type: none"> • Red-winged Parrot (<i>Aprosmictus erythropterus</i>) • Pacific Baza (<i>Aviceda subcristata</i>) • Pied Butcherbird (<i>Cracticus nigrogularis</i>) • White-bellied Cuckooshrike (<i>Coracina papuensis</i>) • Torresian Crow (<i>Corvus orru</i>) • Blue-faced Honeyeater (<i>Entomyzon cyanotis</i>) • White-throated Honeyeater (<i>Melithreptus albogularis</i>) • Silver-crowned Friarbird (<i>Philemon argenticeps</i>) • Helmeted Friarbird (<i>Philemon buceroides</i>) • Varied Lorikeet (<i>Psitteuteles versicolor</i>) • Red-collared Lorikeet (<i>Trichoglossus rubritorquis</i>) 		

Appendix C

Fauna recorded within
the project area

Appendix C Fauna recorded within the project area

Table A Fauna species recorded within project area, January 2021

Common Name	Scientific Name
Amphibians	
Northern Territory Frog	<i>Austrochaperina adelphe</i>
Ornate Burrowing Frog	<i>Platyplectrum ornatum</i>
Birds	
Red-winged Parrot	<i>Aprosmictus erythropterus</i>
Pacific Baza	<i>Aviceda subcristata</i>
Wedge-tailed Eagle	<i>Aquila audax</i>
Sulphur Crested Cockatoo	<i>Cacatua galerita</i>
Pheasant Coucal	<i>Centropus phasianinus</i>
Pied Butcherbird	<i>Cracticus nigrogularis</i>
White-bellied Cuckooshrike	<i>Coracina papuensis</i>
Torresian Crow	<i>Corvus orru</i>
Blue-winged Kookaburra	<i>Dacelo leachii</i>
Mistletoebird	<i>Dicaeum hirundinaceum</i>
Spangled Drongo	<i>Dicrurus bracteatus</i>
Blue-faced Honeyeater	<i>Entomyzon cyanotis</i>
Brown Falcon	<i>Falco berigora</i>
Partridge Pigeon	<i>Geophaps smithii</i>
Yellow-tinted Honeyeater	<i>Lichenostomus flavescens</i>
Brown Honeyeater	<i>Lichmera indistincta</i>
Yellow-throated Minor	<i>Manorina flavigula</i>
White-throated Honeyeater	<i>Melithreptus albogularis</i>
Dusky Honeyeater	<i>Myzomela obscura</i>
Rufous Whistler	<i>Pachycephala rufiventris</i>
Striated Pardalote	<i>Pardalotus striatus</i>
Silver-crowned Friarbird	<i>Philemon argenticeps</i>
Helmeted Friarbird	<i>Philemon buceroides</i>
Little Friarbird	<i>Philemon citreogularis</i>
Northern Rosella	<i>Platycercus venustus</i>
Tawny Frogmouth	<i>Podargus strigoides</i>
Grey-crowned Babbler	<i>Pomatostomus temporalis</i>
Varied Lorikeet	<i>Psitteuteles versicolor</i>
Forest Kingfisher	<i>Todiramphus macleayii</i>
Red-collared Lorikeet	<i>Trichoglossus rubritorquis</i>
Masked Owl	<i>Tyto novaehollandiae melvillensis</i>

Common Name	Scientific Name
Mammals	
Northern Brown Bandicoot	<i>Isoodon macrourus</i>
Savanna Glider	<i>Petaurus ariel</i>
Delicate Mouse	<i>Pseudomys delicatulus</i>
Agile Wallaby	<i>Macropus agilis</i>
Black-footed Tree-rat	<i>Mesembriomys gouldii</i>
Butler's Dunnart	<i>Sminthopsis butleri</i>
Pale Field-rat	<i>Rattus tunneyi</i>
Brush-tail Possum	<i>Trichosurus vulpecula</i>
Reptiles	
	<i>Carlia munda</i>
	<i>Carlia rufilatus</i>
	<i>Ctenotus hilli</i>
	<i>Eremiascincus douglasi</i>
Bynoe's Gecko	<i>Heteronotia binoei</i>
Burton's Legless Lizard	<i>Lialis burtonis</i>
Gilbert's Dragon	<i>Lophognathus gilberti</i>
Mertens' Water Monitor	<i>Varanus mertensi</i>

Appendix D

Motion-activated Camera results

Appendix D Motion-activated Camera results

Methods

AECOM was required to set up survey quadrats according to NT *EPA Guidelines for Assessment of Impacts on Terrestrial biodiversity* (2013) as part of the terrestrial fauna survey on Paru Road. The guidelines require that one motion-activated camera with a bait station and drift fence to be installed at each quadrat. Cameras were installed during the survey undertaken during 15 – 22 January and were removed on 18 February.

Cameras were set up according to the *Camera Trapping Standard Operating Procedure for the Top End Long-term Monitoring Program* (Gillespie *et al.*, 2017). This is the method developed and implemented by the Flora and Fauna division of the NT Department of Environment, Parks and Water Security.

The cameras installed were Reconyx Hyperfire 2 brand.

Table A outlines the locations where motion-activated cameras were installed.

Table A Camera locations

Camera no. / Fauna Site no.	Latitude	Longitude
Camera 1 / Fauna Site 1	-11.73549°	130.65745°
Camera 2 / Fauna Site 2	-11.7281°	130.65644°
Camera 3 / Fauna Site 3	-11.72331°	130.66169°
Camera 4 / Fauna Site 4	-11.721575°	130.670720°
Camera 5 / Fauna Site 5	-11.68494°	130.69131°
Camera 6 / Fauna Site 6	-11.690392°	130.693683°



Plate A Camera setup at Fauna Site 5

Results

Fauna Site 1

Fauna detected on the motion activated camera installed at Fauna Site 1 is displayed below in Table B, Plate B and Plate C. Brushtail Possums and Black-footed Tree-rats are suspected to have interfered with the camera. When the camera was removed on 18 February it was observed to have been broken open and wires had been bitten through. As a result no fauna was detected after 2:12 am on 27 January.

Table B Fauna detected on camera at Fauna Site 1

Common Name	Scientific name	Date	Time
Brushtail Possum	<i>Trichosurus vulpecula</i>	20/01/2021	22:30
Black-footed Tree-rat	<i>Mesembriomys gouldii</i>	22/01/2021	0:13
Northern Brown Bandicoot	<i>Isoodon macrourus</i>	22/01/2021	2:12
Black-footed Tree-rat	<i>Mesembriomys gouldii</i>	22/01/2021	2:15
Brushtail Possum	<i>Trichosurus vulpecula</i>	22/01/2021	2:30
Black-footed Tree-rat	<i>Mesembriomys gouldii</i>	23/01/2021	0:20
Brushtail Possum	<i>Trichosurus vulpecula</i>	24/01/2021	21:26
Black-footed Tree-rat	<i>Mesembriomys gouldii</i>	27/01/2021	2:12



Plate B Common Brushtail Possum



Plate C Black-footed Tree-rat

Fauna Site 2

Fauna detected at Fauna Site 2 on the motion activated camera is displayed below in Table C and Plate D. A Black-footed Tree-rat interfered with the camera, causing it to become detached from the tree it had been tied to. As a result no fauna was detected after 8:30pm on 22 January.

Table C Fauna detected at Fauna Site 2

Common Name	Scientific name	Date	Time
Black-footed Tree-rat	<i>Mesembriomys gouldii</i>	22/01/2021	1:21
Black-footed Tree-rat	<i>Mesembriomys gouldii</i>	22/01/2021	20:21



Plate D Black-footed Tree-rat

Fauna Site 3

Fauna detected on camera at Fauna Site 3 are displayed below in Table D and displayed in Plates E – G.

Table D Fauna detected on camera at Fauna Site 3

Common Name	Scientific name	Date	Time
Torresian Crow	<i>Corvus orru</i>	20/01/2021	11:24
Brushtail Possum	<i>Trichosurus vulpecula</i>	21/01/2021	4:19
Black-footed Tree-rat	<i>Mesembriomys gouldii</i>	21/01/2021	21:39
Pale Field-rat	<i>Rattus tunneyi</i>	21/01/2021	22:08
Brushtail Possum	<i>Trichosurus vulpecula</i>	21/01/2021	23:08
Black-footed Tree-rat	<i>Mesembriomys gouldii</i>	22/01/2021	0:09
Brushtail Possum	<i>Trichosurus vulpecula</i>	22/01/2021	1:00
Black-footed Tree-rat	<i>Mesembriomys gouldii</i>	22/01/2021	3:36
Delicate Mouse	<i>Pseudomys delicatulus</i>	24/01/2021	3:20
Black-footed Tree-rat	<i>Mesembriomys gouldii</i>	26/01/2021	20:52
Black-footed Tree-rat	<i>Mesembriomys gouldii</i>	30/01/2021	21:10
Black-footed Tree-rat	<i>Mesembriomys gouldii</i>	3/02/2021	1:35
Northern Brown Bandicoot	<i>Isoodon macrourus</i>	8/02/2021	21:08



Plate E Torresian Crow



Plate F Pale Field-rat



Plate G Delicate Mouse

Fauna Site 4

Fauna recorded at Fauna Site 4 are displayed below in Table E, Plate H and Plate I.

Table E Fauna detected on camera at Fauna Site 4.

Common Name	Scientific name	Date	Time
Black-footed Tree-rat	<i>Mesembriomys gouldii</i>	16/01/2021	20:17
Brushtail Possum	<i>Trichosurus vulpecula</i>	16/01/2021	20:31
Northern Brown Bandicoot	<i>Isodon macrourus</i>	16/01/2021	21:26
Brushtail Possum	<i>Trichosurus vulpecula</i>	17/01/2021	0:09
Brushtail Possum	<i>Trichosurus vulpecula</i>	17/01/2021	3:23
Brushtail Possum	<i>Trichosurus vulpecula</i>	17/01/2021	20:00
Brushtail Possum	<i>Trichosurus vulpecula</i>	18/01/2021	2:33
Northern Brown Bandicoot	<i>Isodon macrourus</i>	18/01/2021	3:16
Black-footed Tree-rat	<i>Mesembriomys gouldii</i>	18/01/2021	4:37
Black-footed Tree-rat	<i>Mesembriomys gouldii</i>	20/01/2021	2:17
Black-footed Tree-rat	<i>Mesembriomys gouldii</i>	20/01/2021	19:58
Brushtail Possum	<i>Trichosurus vulpecula</i>	21/01/2021	0:12
Black-footed Tree-rat	<i>Mesembriomys gouldii</i>	21/01/2021	1:04

Common Name	Scientific name	Date	Time
Gilberts Dragon	<i>Lophognathus gilberti</i>	21/01/2021	12:07
Northern Brown Bandicoot	<i>Isoodon macrourus</i>	23/01/2021	1:30
Brushtail Possum	<i>Trichosurus vulpecula</i>	23/01/2021	2:28
Brushtail Possum	<i>Trichosurus vulpecula</i>	23/01/2021	22:19
Black-footed Tree-rat	<i>Mesembriomys gouldii</i>	23/01/2021	23:56
Brushtail Possum	<i>Trichosurus vulpecula</i>	24/01/2021	0:13
Brushtail Possum	<i>Trichosurus vulpecula</i>	24/01/2021	2:39
Black-footed Tree-rat	<i>Mesembriomys gouldii</i>	24/01/2021	19:57
Brushtail Possum	<i>Trichosurus vulpecula</i>	24/01/2021	20:40
Black-footed Tree-rat	<i>Mesembriomys gouldii</i>	25/01/2021	0:47
Brushtail Possum	<i>Trichosurus vulpecula</i>	25/01/2021	21:52
Black-footed Tree-rat	<i>Mesembriomys gouldii</i>	26/01/2021	20:18
Northern Brown Bandicoot	<i>Isoodon macrourus</i>	28/01/2021	19:37
Black-footed Tree-rat	<i>Mesembriomys gouldii</i>	28/01/2021	20:15
Agile Wallaby	<i>Macropus agilis</i>	30/01/2021	19:07
Brushtail Possum	<i>Trichosurus vulpecula</i>	31/01/2021	20:50
Brushtail Possum	<i>Trichosurus vulpecula</i>	1/02/2021	23:10
Northern Brown Bandicoot	<i>Isoodon macrourus</i>	3/02/2021	6:13
Brushtail Possum	<i>Trichosurus vulpecula</i>	4/02/2021	1:15
Black-footed Tree-rat	<i>Mesembriomys gouldii</i>	7/02/2021	3:07
Black-footed Tree-rat	<i>Mesembriomys gouldii</i>	7/02/2021	23:33
Black-footed Tree-rat	<i>Mesembriomys gouldii</i>	8/02/2021	1:21
Agile Wallaby	<i>Macropus agilis</i>	9/02/2021	10:04
Brushtail Possum	<i>Trichosurus vulpecula</i>	12/02/2021	5:26



Plate H Northern Brown Bandicoot



Plate I Agile Wallaby

Fauna Site 5

Fauna recorded at Fauna Site 5 are displayed below in Table F and Plate J.

Table F Fauna detected at Fauna Site 5

Common Name	Scientific name	Date	Time
Brushtail Possum	<i>Trichosurus vulpecula</i>	20/01/2021	0:22
Brushtail Possum	<i>Trichosurus vulpecula</i>	20/01/2021	22:17
Brushtail Possum	<i>Trichosurus vulpecula</i>	21/01/2021	0:19
Black-footed Tree-rat	<i>Mesembriomys gouldii</i>	21/01/2021	2:10
Brushtail Possum	<i>Trichosurus vulpecula</i>	23/01/2021	0:24
Brushtail Possum	<i>Trichosurus vulpecula</i>	23/01/2021	23:43
Brushtail Possum	<i>Trichosurus vulpecula</i>	27/01/2020	1:44
Brushtail Possum	<i>Trichosurus vulpecula</i>	8/02/2021	0:38
Brushtail Possum	<i>Trichosurus vulpecula</i>	15/02/2021	4:13



Plate 11 Black-footed Tree-rat

Fauna Site 6

Fauna recorded at Fauna Site 6 are displayed below in Table G, Plate K and Plate L.

Table G Fauna detected on camera at Fauna Site 6

Common Name	Scientific name	Date	Time
Northern Brown Bandicoot	<i>Isoodon macrourus</i>	17/01/2021	1:26
Black-footed Tree-rat	<i>Mesembriomys gouldii</i>	18/01/2021	4:30
Brushtail Possum	<i>Trichosurus vulpecula</i>	18/01/2021	22:49
Black-footed Tree-rat	<i>Mesembriomys gouldii</i>	19/01/2021	2:03
Brushtail Possum	<i>Trichosurus vulpecula</i>	19/01/2021	3:41
Black-footed Tree-rat	<i>Mesembriomys gouldii</i>	19/01/2021	23:37
Brushtail Possum	<i>Trichosurus vulpecula</i>	19/01/2021	23:41
Brushtail Possum	<i>Trichosurus vulpecula</i>	21/01/2021	1:44
Agile wallaby	<i>Macropus agilis</i>	21/01/2021	6:17
Brushtail Possum	<i>Trichosurus vulpecula</i>	21/01/2021	23:10
Brushtail Possum	<i>Trichosurus vulpecula</i>	22/01/2021	2:44
Brushtail Possum	<i>Trichosurus vulpecula</i>	22/01/2021	21:46
Brushtail Possum	<i>Trichosurus vulpecula</i>	23/01/2021	0:04
Brushtail Possum	<i>Trichosurus vulpecula</i>	23/01/2021	2:40
Black-footed Tree-rat	<i>Mesembriomys gouldii</i>	23/01/2021	3:57
Brushtail Possum	<i>Trichosurus vulpecula</i>	23/01/2021	5:03
Brushtail Possum	<i>Trichosurus vulpecula</i>	23/01/2021	22:54
Brushtail Possum	<i>Trichosurus vulpecula</i>	24/01/2021	4:02
Agile wallaby	<i>Macropus agilis</i>	26/01/2021	22:06
Agile wallaby	<i>Macropus agilis</i>	2/02/2021	6:54
Brushtail Possum	<i>Trichosurus vulpecula</i>	4/02/2021	22:27



Plate K Northern Brown Bandicoot


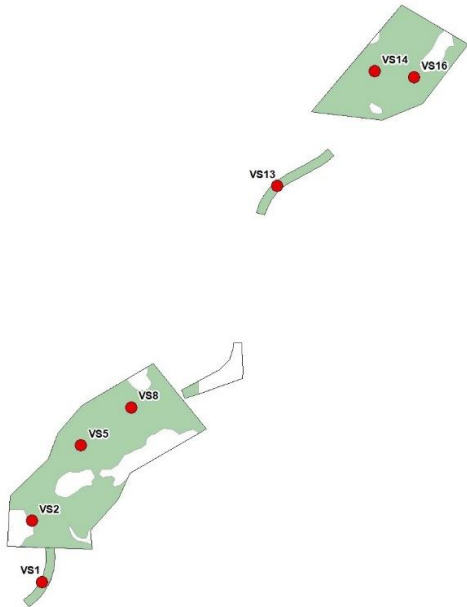



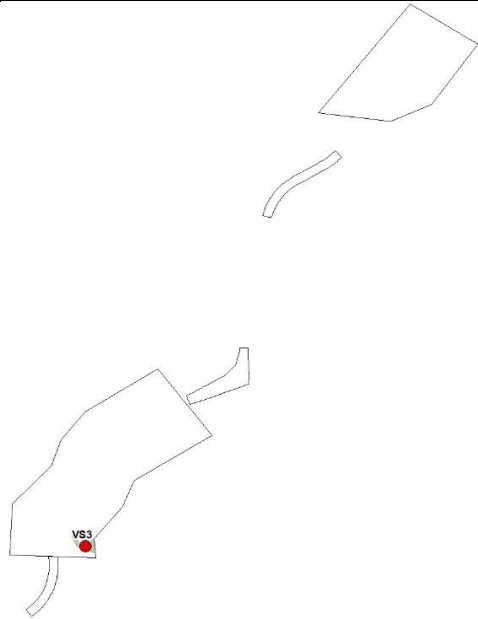
Plate L A pair of Common Brushtail Possums


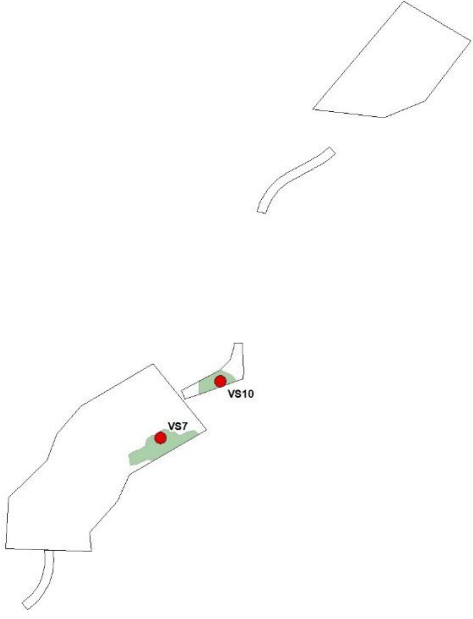
Appendix E


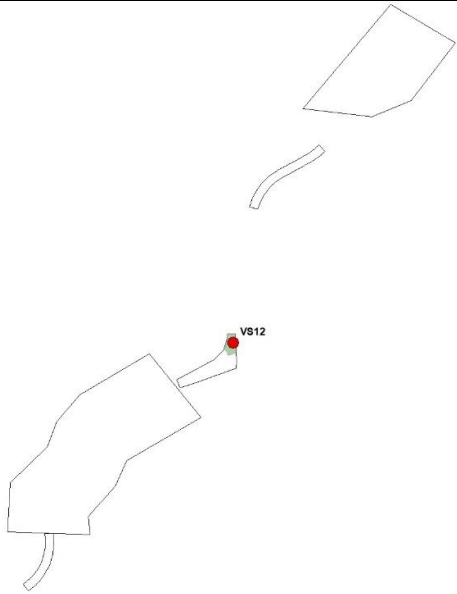
Vegetation community descriptions


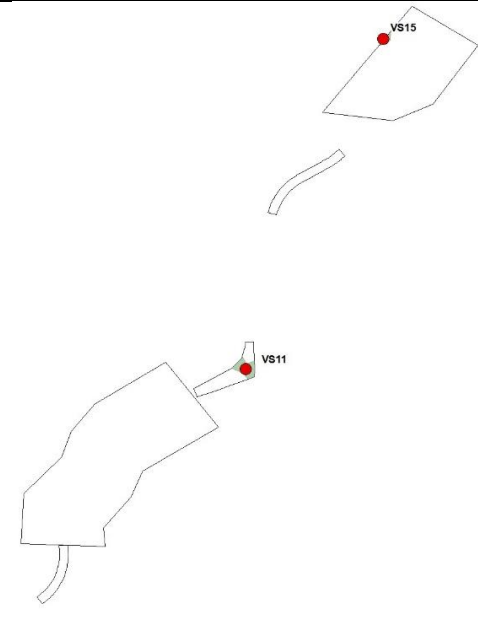
Appendix E Vegetation community descriptions


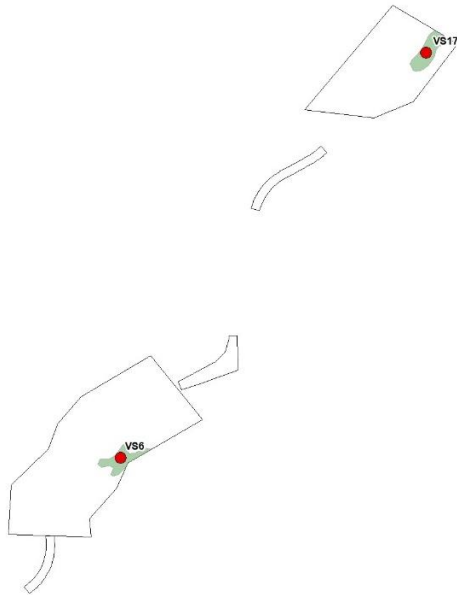
Community 1a - <i>Corymbia nesophila</i> , <i>Eucalyptus tetradonta</i> , <i>Eucalyptus miniata</i> mid high open forest over <i>Erythrophleum chlorostachys</i> , <i>Grevillea decurrens</i> , <i>Terminalia ferdinandiana</i> mid high open shrubland over <i>Sorghum plumosum</i> , <i>Chrysopogon latifolius</i> , <i>Eulalia mackinlayi</i> mid high tussock grassland			
Upper 1: Mid high open forest dominated by <i>Corymbia nesophila</i> (fq 100%), <i>Eucalyptus tetradonta</i> (fq 100%), <i>Eucalyptus miniata</i> (fq 85.7%)			
Mid 1: Mid high open shrubland dominated by <i>Erythrophleum chlorostachys</i> (fq 71%), <i>Grevillea decurrens</i> (fq 71%), <i>Terminalia ferdinandiana</i> (fq 29%)			
Ground 1: Mid high tussock grassland dominated by <i>Sorghum plumosum</i> (fq 86%), <i>Chrysopogon latifolius</i> (fq 57%), <i>Eulalia mackinlayi</i> (fq 29%)			
			
No. of sites: (7) VS1, VS2, VS5, VS8, VS13, VS14, VS16			
Other common species			
Upper stratum (U1): <i>Erythrophleum chlorostachys</i> (fq 14.2%)			
Mid stratum (M1): <i>Petalostigma pubescens</i> (fq 29%), <i>Livistona humilis</i> , (fq 29%), <i>Acacia difficilis</i> (fq 29%), <i>Corymbia foelscheana</i> (fq 29%), <i>Cycas maconochiei</i> (fq 14%)			
Ground stratum (G1): <i>Eriachne avenacea</i> (fq 29%), <i>Planchonia careya</i> (fq 14%), <i>Planchonia careya</i> (fq 14%)			
Landform: Undulating rises			
Soils: Deep red gravely sandy loams			
Total area of the survey area: 312.8ha (81.5%)			
Community 1a structural summary			
Strata	Modal growth form	Mean cover %	Mean height (m)
Upper U1	Tree	50.7 (40 - 60)	22.3 (18 - 25)
Mid M1	Shrub	18.4 (15 - 20)	8.5 (8 - 10)
Ground G1	Tussock grass	34.2 (30 - 40)	1 (1)


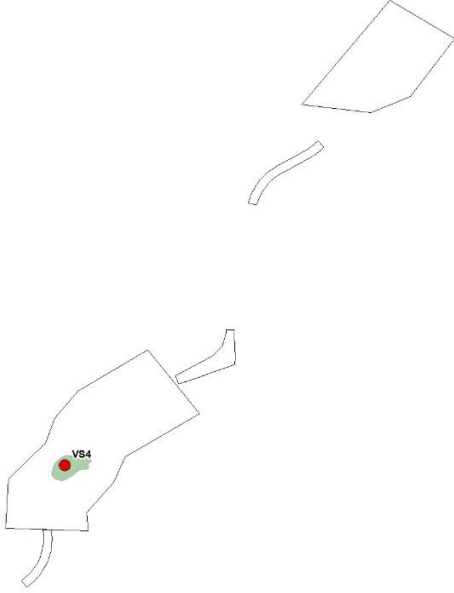
Community 2a - <i>Acacia auriculiformis</i> , <i>Canarium australianum</i> , <i>Terminalia microcarpa</i> mid high open forest over <i>Clerodendrum tomentosum</i> , <i>Alphitonia excelsa</i> , <i>Pandanus spiralis</i> mid high open shrubland over <i>Curcuma australasica</i> , <i>Dioscorea bulbifera</i> , <i>Ampelocissus acetosa</i> mid high open forbland			
Upper 1: Mid high open forest dominated by <i>Acacia auriculiformis</i> (fq 100%), <i>Canarium australianum</i> (fq 100%), <i>Terminalia microcarpa</i> (fq 100%)			
Mid 1: Mid high open shrubland dominated by <i>Clerodendrum tomentosum</i> (fq 100), <i>Alphitonia excelsa</i> (fq 100%), <i>Pandanus spiralis</i> (fq 100%)			
Ground 1: Mid high open forbland dominated by <i>Curcuma australasica</i> (fq 100%), <i>Dioscorea bulbifera</i> (fq 100%), <i>Ampelocissus acetosa</i> (fq 100%)			
			
No. of sites: (1) VS3			
Other common species			
Upper stratum (U1): -			
Mid stratum (M1): -			
Ground stratum (G1):			
Landform Gully			
Soils: Deep reddish-brown sandy loam			
Total area of the survey area: 1.8ha (0.5%)			
Community 2a structural summary			
Strata	Modal growth form	Mean cover %	Mean height (m)
Upper U1	Tree	80 (80)	12 (12)
Mid M1	Shrub	20 (20)	7 (7)
Ground G1	Tussock grass	30 (30)	1 (1)


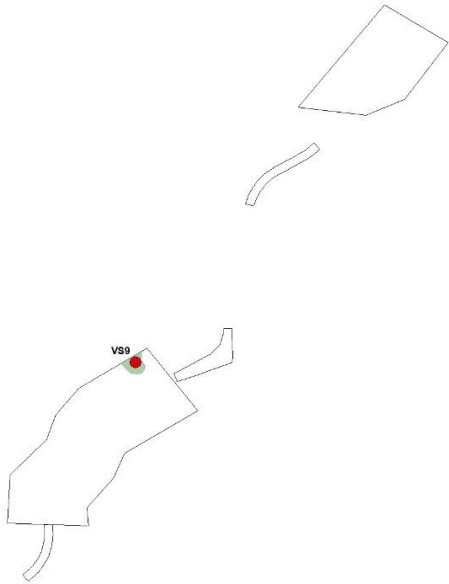
Community 2b - <i>Erythrophleum chlorostachys</i> , <i>Corymbia bella</i> , <i>Acacia auriculiformis</i> mid high woodland over <i>Terminalia ferdinandiana</i> , <i>Petalostigma pubescens</i> , <i>Lophostemon lactiflorus</i> mid high open shrubland over <i>Mnesithea rottboellioides</i> , <i>Alloteropsis semialata</i> , <i>Chrysopogon latifolius</i> mid high tussock grassland			
Upper 1: Mid high woodland dominated by <i>Erythrophleum chlorostachys</i> (fq 50%), <i>Corymbia bella</i> (fq 50%), <i>Acacia auriculiformis</i> (fq 50%),			
Mid 1: Mid high open shrubland dominated by <i>Terminalia ferdinandiana</i> (fq 50%), <i>Petalostigma pubescens</i> (fq 50%), <i>Lophostemon lactiflorus</i> (fq 50%)			
Ground 1: Mid high tussock grassland dominated by <i>Mnesithea rottboellioides</i> (fq 100%), <i>Alloteropsis semialata</i> (fq 50%), <i>Chrysopogon latifolius</i> (fq 50%)			
			
No. of sites: (2) VS7, VS10			
Other common species			
Upper stratum (U1): <i>Corymbia confertiflora</i> (fq 50%), <i>Eucalyptus tetradonta</i> (fq 50%), <i>Grevillea pteridifolia</i> (fq 50%)			
Mid stratum (M1): <i>Planchonia careya</i> (fq 50%), <i>Corymbia ptychocarpa</i> (fq 50%), <i>Syzygium eucalyptoides</i> subsp. <i>Bleeseri</i> (fq 50%)			
Ground stratum (G1): <i>Chrysopogon latifolius</i> (fq 50%), <i>Curcuma australasica</i> (fq 50%), <i>Ampelocissus acetosa</i> (fq 50%)			
Landform: Slopes and rises			
Soils: Deep brown sandy loam			
Total area of the survey area: 20.3ha (5.3%)			
Community 2b structural summary			
Strata	Modal growth form	Mean cover %	Mean height (m)
Upper U1	Tree	32.5 (30 - 35)	20.5 (16 - 26)
Mid M1	Shrub	27.5 (25 - 30)	9 (8 - 10)
Ground G1	Tussock grass	50 (40 - 60)	0.8 (0.6 - 1)
Community 2c - <i>Eucalyptus oligantha</i> , <i>Erythrophleum chlorostachys</i> , mid high open forest over <i>Planchonia careya</i> , <i>Acacia lamprocarpa</i> , <i>Terminalia ferdinandiana</i> , mid high open shrubland over			

<i>Chrysopogon latifolius</i> , <i>Mnesithea rottboellioides</i> , <i>Ampelocissus acetosa</i> mid high tussock grassland			
Upper 1: Mid high open forest dominated by <i>Eucalyptus oligantha</i> (fq 100%), <i>Erythrophleum chlorostachys</i> (fq 100%)			
Mid 1: Mid high open shrubland dominated by <i>Planchonia careya</i> (fq 100%), <i>Acacia lamprocarpa</i> (fq 100%), <i>Terminalia ferdinandiana</i> (fq 100%)			
Ground 1: Mid high tussock grassland dominated by <i>Chrysopogon latifolius</i> (fq 100%), <i>Mnesithea rottboellioides</i> (fq 100%), <i>Ampelocissus acetosa</i> (fq 100%)			
			
No. of sites: (1) VS12			
Other common species			
Upper stratum (U1): -			
Mid stratum (M1): -			
Ground stratum (G1): -			
Landform: Slopes and rises			
Soils: Deep brown sandy loam			
Total area of the survey area: 2.8ha (0.7%)			
Community 2c structural summary			
Strata	Modal growth form	Mean cover %	Mean height (m)
Upper U1	Tree	60 (60)	16 (16)
Mid M1	Shrub	15 (15)	8 (8)
Ground G1	Tussock grass	60 (60)	1 (1)

Community 3a - <i>Melaleuca leucadendra</i> , <i>Acacia auriculiformis</i> , <i>Lophostemon lactifluus</i> mid high open forest over <i>Pandanus spiralis</i> , <i>Litsea glutinosa</i> , <i>Livistona humilis</i> mid high open shrubland over <i>Mnesithea rottboellioides</i> , <i>Chrysopogon latifolius</i> , <i>Ampelocissus acetosa</i> mid high tussock grassland			
Upper 1: Mid high open forest dominated by <i>Melaleuca leucadendra</i> (fq 100%), <i>Acacia auriculiformis</i> (fq 100%), <i>Lophostemon lactifluus</i> (fq 50%)			
Mid 1: Mid high open shrubland dominated by <i>Pandanus spiralis</i> (fq 100%), <i>Litsea glutinosa</i> (fq 50%), <i>Livistona humilis</i> (fq 50%)			
Ground 1: Mid high tussock grassland dominated by <i>Mnesithea rottboellioides</i> (fq 100%), <i>Chrysopogon latifolius</i> (fq 100%), <i>Ampelocissus acetosa</i> (fq 50%)			
			
No. of sites: (2) VS11, VS15			
Other common species			
Upper stratum (U1): <i>Corymbia bella</i> (fq 50%)			
Mid stratum (M1): <i>Choriceras tricornis</i> (fq 50%), <i>Planchonia careya</i> (fq 50%)			
Ground stratum (G1): <i>Sorghum plumosum</i> (fq 50%)			
Landform: Creek line			
Soils: Deep brown sandy loam			
Total area of the survey area: 4.3ha (1.1%)			
Community 3a structural summary			
Strata	Modal growth form	Mean cover %	Mean height (m)
Upper U1	Tree	55 (50 - 60)	22.5 (20 - 25)
Mid M1	Shrub	27.5 (25 - 30)	9 (8 - 10)
Ground G1	Tussock grass	50 (40 - 60)	1 (1)

Community 4a - <i>Melaleuca viridiflora</i> , <i>Grevillea pteridifolia</i> , ± <i>Eucalyptus tetrodonta</i> mid high open woodland ± isolated trees over <i>Petalostigma pubescens</i> , <i>Melaleuca viridiflora</i> , <i>Verticordia cunninghamii</i> mid high shrubland over <i>Eriachne avenacea</i> , <i>Schoenus sparteus</i> , <i>Sorghum plumosum</i> mid high open tussock grassland			
Upper 1: Mid high open woodland ± isolated trees dominated by <i>Melaleuca viridiflora</i> (fq 50%), <i>Grevillea pteridifolia</i> (fq 50%), ± <i>Eucalyptus tetrodonta</i> (fq 50%)			
Mid 1: Mid high shrubland dominated by <i>Petalostigma pubescens</i> (fq 100%), <i>Melaleuca viridiflora</i> (fq 100%), <i>Verticordia cunninghamii</i> (fq 50%)			
Ground 1: Mid high open tussock grassland dominated by <i>Eriachne avenacea</i> (fq 100%), <i>Schoenus sparteus</i> (fq 50%), <i>Sorghum plumosum</i> (fq 50%)			
			
No. of sites: (2) VS6, VS17			
Other common species			
Upper stratum (U1): <i>Corymbia bleeseri</i> (fq 50%)			
Mid stratum (M1): <i>Grevillea pteridifolia</i> (fq 50%)			
Ground stratum (G1): <i>Petalostigma pubescens</i> (fq 50%)			
Landform: Perched drainage			
Soils: Shallow rocky soils			
Total area of the survey area: 16.7ha (4.4%)			
Community 4a structural summary			
Strata	Modal growth form	Mean cover %	Mean height (m)
Upper U1	Tree	7 (4 - 10)	9 (6 - 12)
Mid M1	Shrub	35 (30 - 40)	5.5 (4 - 7)
Ground G1	Tussock grass	15 (15)	0.75 (0.5 - 1)

Community 4b - <i>Erythrophleum chlorostachys</i> mid high woodland over <i>Terminalia ferdinandiana</i> , <i>Melaleuca viridiflora</i> , <i>Corymbia foelscheana</i> mid high shrubland over <i>Mnesithea rottboellioides</i> , <i>Planchonia careya</i> mid high tussock grassland			
Upper 1: Mid high woodland dominated by <i>Erythrophleum chlorostachys</i> (100%)			
Mid 1: Mid high shrubland over <i>Terminalia ferdinandiana</i> (100%), <i>Melaleuca viridiflora</i> (fq 100%), <i>Corymbia foelscheana</i> (fq 100%)			
Ground 1: Mid high tussock grassland dominated by <i>Mnesithea rottboellioides</i> (fq 100%), <i>Planchonia careya</i> (fq 100%)			
			
No. of sites: (1) VS4			
Other common species			
Upper stratum (U1): -			
Mid stratum (M1): -			
Ground stratum (G1): -			
Landform: Upland drainage			
Soils: Deep brown sandy clay			
Total area of the survey area: 9.5ha (2.5%)			
Community 4b structural summary			
Strata	Modal growth form	Mean cover %	Mean height (m)
Upper U1	Tree	20 (20)	18 (18)
Mid M1	Shrub	50 (50)	8 (8)
Ground G1	Tussock grass	35 (35)	1 (1)

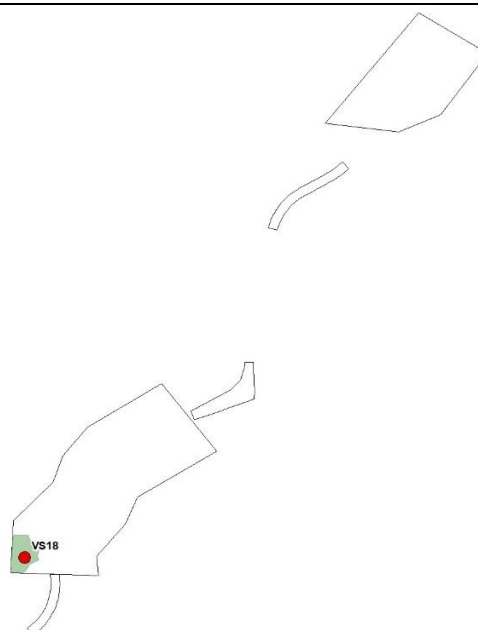
Community 4c - <i>Corymbia nesophila</i> , <i>Erythrophleum chlorostachys</i> mid high woodland over <i>Erythrophleum chlorostachys</i> , <i>Pandanus spiralis</i> , <i>Melaleuca viridiflora</i> mid high open shrubland over <i>Sorghum plumosum</i> , <i>Planchonia careya</i> , <i>Melaleuca viridiflora</i> mid high tussock grassland			
Upper 1: Mid high woodland dominated by <i>Corymbia nesophila</i> (fq 100%), <i>Erythrophleum chlorostachys</i> (fq 100%)			
Mid 1: Mid high open shrubland dominated by <i>Erythrophleum chlorostachys</i> (fq 100%), <i>Pandanus spiralis</i> (fq 100%), <i>Melaleuca viridiflora</i> (fq 100%)			
Ground 1: Mid high tussock grassland dominated by <i>Sorghum plumosum</i> (fq 100%), <i>Planchonia careya</i> (fq 100%), <i>Melaleuca viridiflora</i> (fq 100%)			
			
No. of sites: (1) VS9			
Other common species			
Upper stratum (U1): -			
Mid stratum (M1): -			
Ground stratum (G1): -			
Landform: Low drainage slope			
Soils: Deep brown sandy loam			
Total area of the survey area: 4.5ha (1.2%)			
Community 4c structural summary			
Strata	Modal growth form	Mean cover %	Mean height (m)
Upper U1	Tree	25 (25)	20 (20)
Mid M1	Shrub	15 (15)	10 (10)
Ground G1	Tussock grass	30 (30)	1 (1)

Community 4d - *Erythrophleum chlorostachys*, *Corymbia polycarpa*, *Acacia auriculiformis* mid high open woodland over *Melaleuca viridiflora*, *Grevillea pteridifolia*, *Petalostigma pubescens* mid high shrubland over *Sorghum plumosum*, *Thaumastochloa major*, *Spermacoce stenophylla*

Upper 1: Mid high open woodland dominated by *Erythrophleum chlorostachys* (fq 100%), *Corymbia polycarpa* (fq 100%), *Acacia auriculiformis* (fq 100%)

Mid 1: Mid high shrubland dominated by *Melaleuca viridiflora* (100%), *Grevillea pteridifolia* (100%), *Petalostigma pubescens* (fq 100%)

Ground 1: Mid high tussock grassland dominated by *Sorghum plumosum* (fq 100%), *Thaumastochloa major* (fq 100%), *Spermacoce stenophylla* (fq 100%)



No. of sites: (1) VS18

Other common species

Upper stratum (U1): -

Mid stratum (M1): -

Ground stratum (G1): -

Landform: Low broad drainage

Soils: Sandy clay

Total area of the survey area: 9.7ha (2.5%)

Community 4d structural summary

Strata	Modal growth form	Mean cover %	Mean height (m)
Upper U1	Tree	6 (6)	10 (10)
Mid M1	Shrub	30 (30)	8 (8)
Ground G1	Tussock grass	40 (40)	1 (1)