

Fauna and Flora Survey, Vegetation Assessment

Of The Proposed Road-Verge Clearing of the Boxwood Hill-Ongerup Road



Steve Elson

Contents

Introduction/ Executive Summary/ Objectives	3
Methodology Flora Survey/Vegetation Assessment	4
Site Location Proposed road verge clearing Zones for the Boxwood Hill	5
Ongerup Road	
Survey Site 1	6
Survey Site 2	7
Survey Site 3	8
Flora Survey/Vegetation Assessment Results and Discussion	9
Methodology Fauna Survey	10
Fauna Species List, Boxwood Hill-Ongerup Road	11-21
Fauna Survey Results and Discussion	22
Threatening Processes	23
Conclusion and Recommendations	24
Limitations	25
Acknowledgments and References	26

Introduction/ Executive Summary

The Shire of Jerramungup manages and maintains a vast area of minor and major Road network systems, the total area covers more than 20 000km, with the ever increasing population and the high volumes of traffic including, heavy Agricultural machinery, Road Trains and light vehicles, these road network systems have been placed under increased pressures especially on the Gravel Road network systems which are constantly impacted on and degraded through increased Vehicle movements and seasonal and unseasonal rainfall events.

The Shire of Jerramungup is committed to continually improving on and leading the way in managing and maintaining the shires entire Road network systems to current industry standards and to increase the efficiency, Safety and accessibility to all road users.

The Shire is currently undergoing a modification project of a major road network system West of Boxwood Hill, with the purpose of widening a 6km length of gravel road along the Boxwood-Hill-Ongerup road, this modification project will involve the clearing of vegetation of 1m, back from the existing road verge along both sides of the road network system, this will also involve the clearing of approximately 1.2 hectares.(refer to map 1 page 5).

Prior to any clearing operations the Shire of Jerramungup have engaged Steve Elson to carry out a detailed and systematic Fauna and Flora Survey / Vegetation Assessment along the proposed clearing zones of the 6km stretch of road, along Boxwood Hill- Ongerup Road.

Steve Elson possesses more than 30 years of field based research in all aspects of Environmental Management with a key focus on Avian Ecology and the Management of Threatened Ecosystems and Communities of South-Western Australia.

Steve currently holds a Diploma in Conservation and Land Management and is the process of Writing and completing two Scientific based books on **The Breeding Ecology Of The Avian Fauna Of South-Western Australia** and **Shorebirds Of South-Western Australia**.

Objectives

The purpose of the Fauna and Flora Survey/ Vegetation Assessment was to identify Rare, Threatened and priority listed Fauna and Flora as well as to identify Threatened Ecological Communities within the proposed clearing zones along the 6km road verge Vegetation Systems of the Boxwood Hill- Ongerup Road.

Key elements of this survey will also assist in identifying current threatening processes and potential threatening process relevant to any clearing operations that may take place.

This Survey report will also assist in the future management of the Shires Extensive road network systems.

Methodology

Flora Survey/ Vegetation assessment of the proposed clearing Zones along the Boxwood / Ongerup Road

During the Months of May and June of 2016 a detailed Flora Survey and Vegetation Assessment was carried out within the road verge vegetation systems along the proposed clearing zones (1m Verge clearing) of the Boxwood Hill Ongerup Road net work system of 6km.

The Key survey method employed was the meandering style survey, this involved the use of a vehicle to drive along the entire 6km stretch of road and map the vegetation structure and floristic composition within the Mallee and sub Mallee habitat systems along the proposed clearing zones of the boxwood Hill- Ongerup road.

During the survey period a GPS unit was used to assist in mapping the Habitat systems, Vegetation structure and other geological and hydrological features within and beyond the road network system, (boxwood Hill- Ongerup Road).

In support of the initial drive by inspection of the proposed road verge clearing Zones along the Boxwood Hill - Ongerup Road, a Physical on ground Meandering survey method was also employed to gather information on the Floristic composition and Vegetation Communities within the diverse Habitat systems.

The Flora Survey/ Vegetation assessment was divided into three survey sites along the Proposed road verge clearing zones of the Boxwood Hill-Ongerup Road, these sites were surveyed over 6 days. The first section (Survey Site 1.) was surveyed on the 18th and 24th of May 2016 covering approximately 1.6km of a Meandering style walk survey.

The second section (Survey Site 2) was surveyed on the 3rd and 4th of June 2016, the area covered was approximately 1.8km and the same survey technique was employed as Survey site 1.

The third Section (Survey Site 3) covered approximately 2.4 Km and was surveyed on the 16th and 17th of June 2016.

The first survey was to map out and identify key geological features along the proposed 6km road verge clearing zones of the Boxwood Hill-Ongerup Road network System, GPS Reference points were logged at the starting point and Finishing point. (Refer to map 1).

Map 1

Proposed road verge clearing zone for the Boxwood Hill-Ongerup road.

— Represents the proposed clearing area of 6 km of road verge from the corner of Normans road to the North-West section along the Boxwood Hill - Ongerup road.



Corackerup Road

Boxwood Hill - Ongerup Road

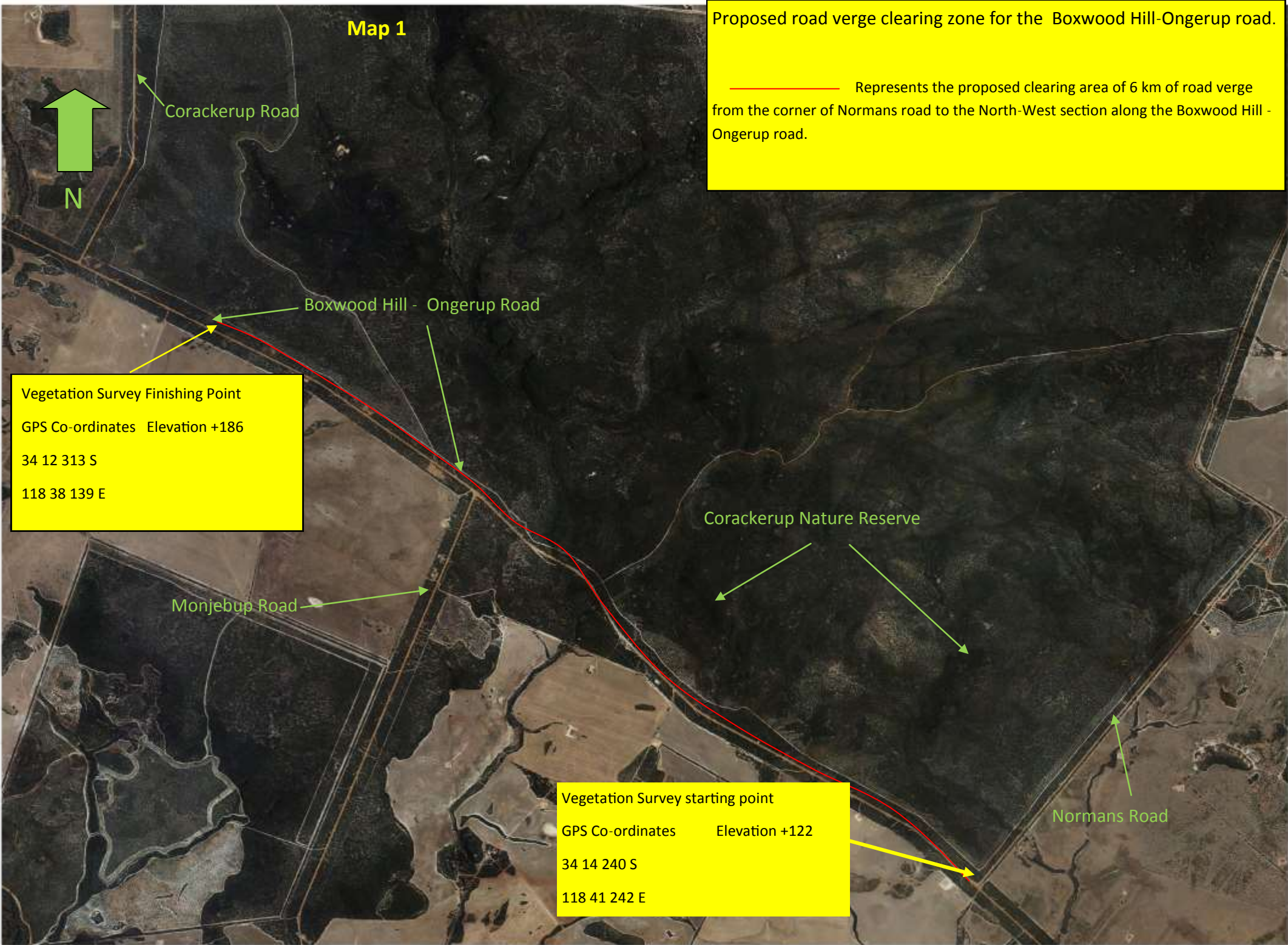
Corackerup Nature Reserve

Monjebup Road

Normans Road

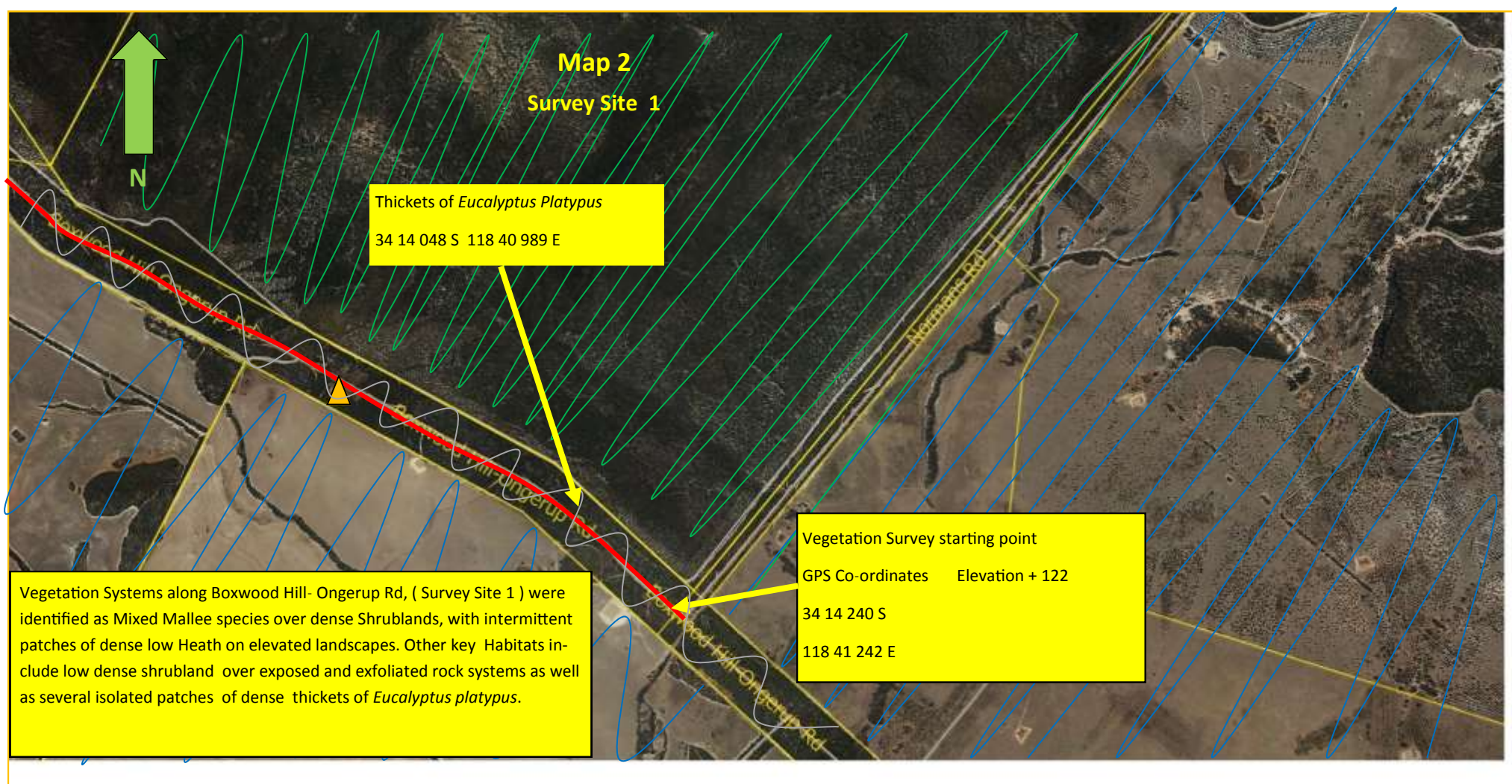
Vegetation Survey Finishing Point
GPS Co-ordinates Elevation +186
34 12 313 S
118 38 139 E

Vegetation Survey starting point
GPS Co-ordinates Elevation +122
34 14 240 S
118 41 242 E



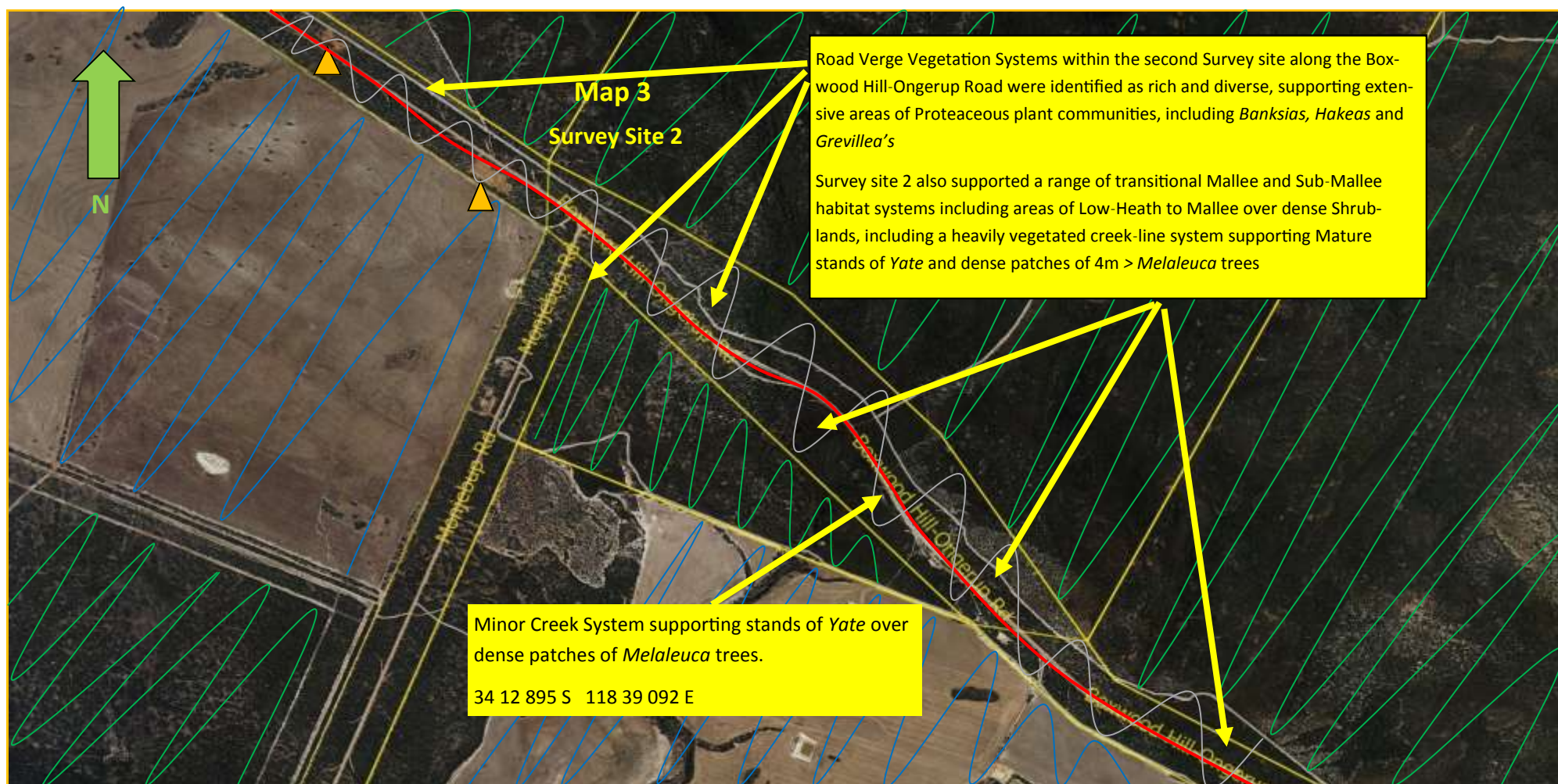
Vegetation Systems ,Geological, Hydrological Features (Survey Site 1)

- Proposed Road verge clearing Zones. — Road Verge Vegetation Systems —
- Boundary Identification Lines —
- Agricultural Lands —
- Nature Reserve —
- Disused Gravel Extraction Pit ▲



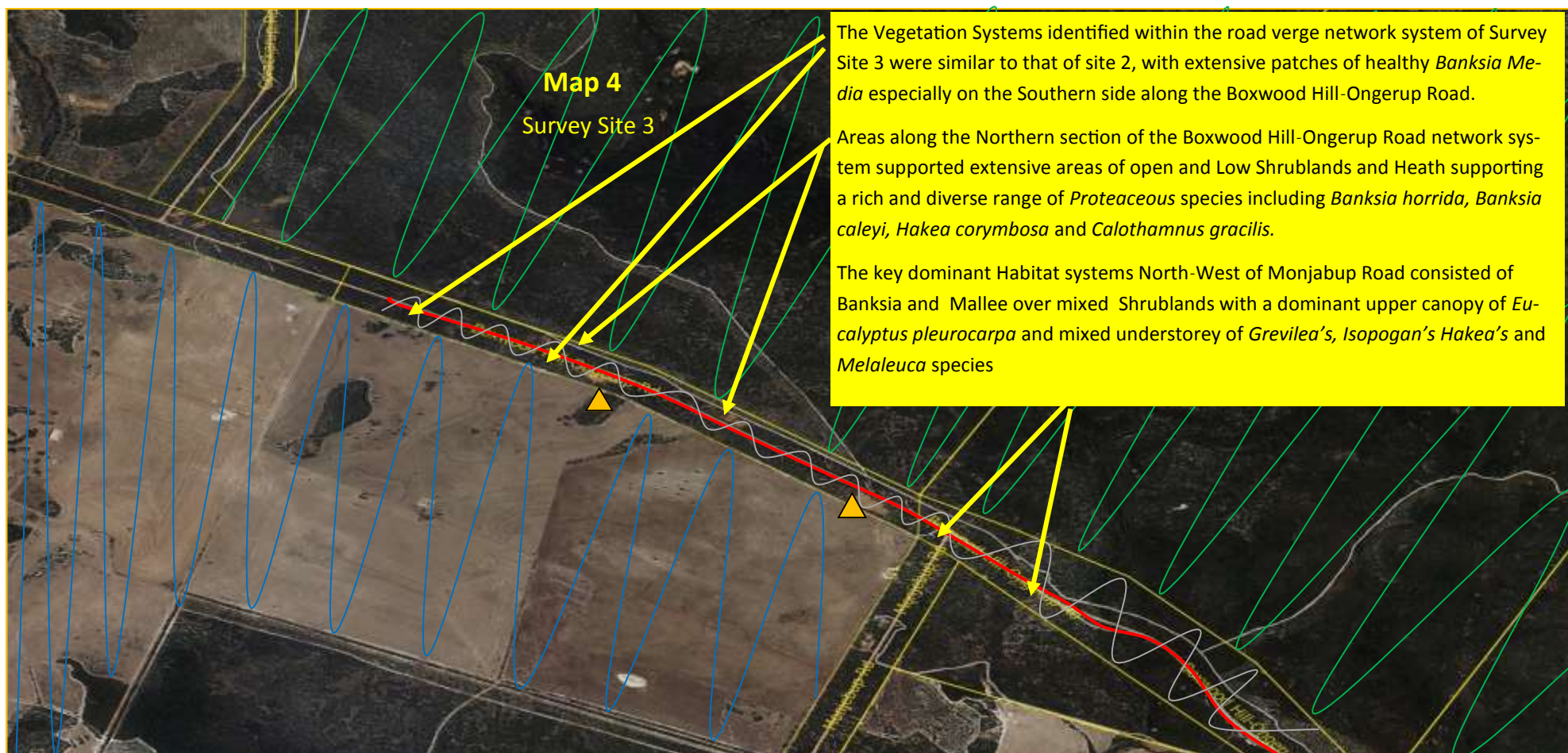
Vegetation Systems, Geological, Hydrological Features (Survey Site 2)

- Proposed Road Verge Clearing Zones ————
- Road Verge Vegetation Systems ————
- Boundary Identification Lines ————
- Agricultural Lands ————
- Nature Reserves ————
- Disused Gravel Extraction Pit ▲



Vegetation Systems, Geological, Hydrological Features (Survey Site 3)

- Proposed Road Verge Clearing Zones —
- Boundary Identification Lines —
- Agricultural Lands —
- Nature Reserves —
- Disused Gravel Extraction Pits ▲
- Road verge Vegetation Systems —



Flora Survey/ Vegetation Assessment, Results and Discussion

Based on the extensive meandering surveys conducted within the road verge vegetation systems along the 6km section of the Boxwood Hill– Ongerup Road and beyond the proposed clearing zones, it was found that the area is of high Ecological significance in that the Vegetation systems and Floristic Composition along the Boxwood Hill-Ongerup Road between Normans Road and North West to Corackerup Road supports extensive un-fragmented Mallee and Sub-Mallee Habitat systems combined with a high degree of Proteaceous rich plant communities, (refer to maps 2,3 and 4).

The Proposed road verge clearing of 1m either side of the 6km length of the Boxwood Hill– Ongerup Road would have minimal impact on the existing road verge vegetation systems as the buffer zones between the road verge vegetation and the Agricultural lands to the South of Boxwood Hill-Ongerup road were measured at between 80 and 100m in width.

During the survey period no Priority listed Flora were identified within the proposed 1m road verge clearing zones of the Boxwood hill-Ongerup Road network system.

Fauna Survey Methodology

The Author of this report has conducted extensive Visual Fauna Surveys within Road Verge vegetation systems (Vegetated Corridor Systems) Between the Stirling Range National Park and the Fitzgerald River National park since July 2007.

The key objectives of these long term surveys were to identify Faunal assemblages and individual Faunal Species that utilized the Road verge vegetation network systems as Feeding Areas, Breeding sites and migration pathways to other key habitat systems between the Stirling Range National Park and the Fitzgerald River National Park.

In support of this report the Author conducted extensive and systematic on ground Fauna surveys within the road verge vegetation systems along Normans Road And Boxwood Hill Ongerup Road From July-November 2007, August-December 2009, September-December 2010, July-November 2012, September 2013, July-October 2015 and May-June 2016.

The key Fauna Survey Methods employed were Systematic search activities, these were carried out with the Support of a GPS unit, the meandering style search activities were mostly conducted during the Winter/Spring months. The advantage of conducting Fauna surveys during this period were to identify the maximum number of Avian species breeding within and beyond the Road Verge Vegetation Systems.

The meandering style survey technique's also allowed for a more detailed examination of Faunal Habitat Systems adjacent to the Road network Systems.

In conjunction with the meandering style survey techniques, Physical Habitat examination surveys were carried out to identify tracks, scats , feathers and other Forms of evidence left behind by various species of Fauna.

Digital Video, Audio and still photography were used to capture evidence of various Faunal activities such as Feeding, Social and Breeding Behaviour, this information was critical in identifying Faunal Assemblages as well as Priority listed Fauna that directly or indirectly used the Road Verge Vegetation Systems.

Fauna Species recorded within the Road Verge Vegetation Systems, between the Corner of Normans Road and North-West along Boxwood Hill - Ongerup Road.

Since July 2007 Avian Fauna Surveys were carried out within the extensive Vegetated road verge network systems between the Stirling Range National Park and the Fitzgerald River National Park. Between July 2007 and June 2016 a total of 110 Avian species were recorded utilizing the various Habitat systems within and beyond the Vegetated road verge network system between Normans Road and North-West along Boxwood Hill-Ongerup road (refer to map 1).

Avian Species List

Emu *Dromaius novaehollandiae*

Maleefowl *Leipoa ocellata*

Stubble Quail *Coturnix pectoralis*

Australian Shelduck *Tadorna tadornoides*

Australian Wood Duck *Chenonetta jubata*

Grey Teal *Anas gracilis*

Pacific Black Duck *Anas superciliosa*

Chestnut Teal *Anas castanea*

White-Faced Heron *Egretta novaehollandiae*

Straw-Necked Ibis *Threskiornis spinicollis*

Black-Shouldered Kite *Elanus axillaris*

Square-Tailed Kite *Lophoictinia isura*

Wedge-Tailed Eagle *Aquila audax*

Little Eagle *Hieraaetus morphnoides*

Whistling Kite *Haliastur sphenurus*

Collared Sparrowhawk *Accipiter cirrhocephalus cirrhocephalus*

Brown Goshawk *Accipiter fasciatus fasciatus*

Swamp Harrier *Circus approximans*

Spotted Harrier *Circus assimilis*



Carnaby's Black-Cockatoo



Emu



Crested Pigeon



Grey Teal



Swamp Harrier



Wedge-Tailed Eagle

Nankeen Kestrel *Falco cenchroides cenchroides*

Brown Falcon *Falco berigora berigora*

Australian Hobby *Falco longipennis longipennis*

Peregrine Falcon *Falco peregrinus* subspecies *macropus*

Painted Button Quail *Turnix varia*

Little Button Quail *Turnix velox*

Black-Fronted Dotterel *Eseyornis melanops*

Inland Dotterel *Charadrius australis*

Banded Lapwing *Vanellus tricolour*

Common Bronzewing *Phaps chalcopters*

Brush Bronzewing *Phaps elegans* subspecies *occidentalis*

Crested Pigeon *Ocyphaps lophotes*

Carnaby's Black-Cockatoo *Calyptorhynchus latirostris*

Galah *Eolophus roseicapillus roseicapilla*

Purple-Crowned Lorikeet *Glossopsitta porphyrocephala*

Regent Parrot *Polytelis anthopeplus* subspecies

Western Rosella *Platycercus icterotis* subspecies *icterotis*

Australian Ringneck *Barnardius zonarius* subspecies *semitorquatus*

Red Capped Parrot *Purpureicephalus spurius*

Elegant Parrot *Neophema elegans* subspecies *carteri*

Pallid Cuckoo *Cuculus pallidus*

Fan-Tailed Cuckoo *Cacomantis flabelliformis*

Horsfield's Bronze Cuckoo *Chrysococcyx basalis*

Shinning Bronze Cuckoo *Chrysococcyx lucidus*

Boobook Owl *Ninox novaeseelandiae* subspecies *ocellata*



Owlet Nightjar



Eastern Barn Owl



Southern Boobook



Tawny Frogmouth

Eastern Barn Owl *Tyto alba* subspecies *delicatula*

Tawny Frogmouth *Podargus strigoides* subspecies *brachypterus*

Spotted Nightjar *Eurostopodus argus*

Australian Owlet Nightjar *Aegothleles cristatus*

Laughing Kookaburra *Dacelo novaeguineae*

Sacred Kingfisher *Todiramphus sanctus*

Rainbow Bee-Eater *Merops ornatus*

Splendid Fairy-Wren *Malurus splendens* subspecies *splendens*

Blue-Breasted Fairy-Wren *Malurus pulcherrimus*

Southern Emu-Wren *Stipiturus malachurus* subspecies *westernensis*

White-browed Scrubwren *Sericornis frontalis*

Shy Heathwren *Hylacola cauta* subspecies *whitloki*

Rufous Field-Wren *Calamanthus campestris*

Weebill *Smicronis brevirostris* subspecies

Western Gerygone *Gerygone fusca* subspecies *fusca*

Inland Thornbill *Acanthiza apicalis*

Yellow Rumped Thornbill *Acanthiza chrysorrhoa chrysorrhoa*

Spotted Pardalote *Pardalotus punctatus* subspecies *xanthopyge*

Striated Pardalote *Pardalotus striatus* subspecies *substriatus*

Yellow-Throated Miner *Manorina flavigula* subspecies *wayensis*

Red Wattlebird *Anthochaera carunculata* subspecies *woodwardi*

Western Wattlebird *Anthochaera lunulate*

Singing Honeyeater *Lichenostomus virescens virescens*

White-Eared Honeyeater *Lichenostomus leucotis* subspecies *novaenorcae*

Purple-Gaped Honeyeater *Lichenostomus cratitius* subspecies *occidentalis*



Brown Honeyeater



Brown-Headed Honeyeater



Sacred Kingfisher



Western Wattlebird



Yellow-Throated Miner

Brown Honeyeater *Lichmera indistincta*

Yellow Plumed Honeyeater *Lichenostomus ornatus*

Brown - Headed Honeyeater *Melithreptus brevirostris* subspecies *magnirostris*

New Holland Honeyeater *Phylidonyris novaehollandiae* subspecies *longirostris*

White-Cheeked Honeyeater *Phylidonyris nigra* subspecies *gouldi*

Tawny-Crowned Honeyeater *Phylidonyris melanops melanops*

Western Spinebill *Acanthorhynchus superciliosus*

White Fronted Chat *Epthianura albifrons*

White-Browed Babbler *Pomatostomus superciliosus*

Western Whipbird *Psophodes nigrogularis*

Varied Sittella *Daphoenositta chrysoptera* subspecies *pileata*

Crested Bellbird *Oreoica gutturalis gutturalis*

Golden Whistler *Pachycephala pectoralis* subspecies *fuliginosa*

Rufous Whistler *Pachycephala rufiventris rufiventris*

Grey-Shrike Thrush *Colluricincla harmonica* subspecies *rufiventris*

Restless Flycatcher *Myiagra inquieta inquieta*

Magpie-Lark *Grallina cyanoleuca cyanoleuca*

Grey Fantail *Rhipidura fuliginosa* subspecies *preissi*

Willie Wagtail *Rhipidura leucophrys leucophrys*

Scarlet Robin *Petroica multicolour* subspecies *cambelli*

Red-Capped Robin *Petroica goodenovi*

Western Yellow Robin *Eopsaltria griseogularis*

Southern Scrub-Robin *Drymodes brunneopygia*

Black-Faced Cuckoo-Shrike *Coracina novaehollandiae* subspecies *melanops*

White-Winged Triller *Lalage sueurii* subspecies *tricolor*



Red-Capped Robin



Golden Whistler



Grey-Shrike Thrush



Western Yellow Robin



Grey Fantail



Rufous Whistler

Dusky Woodswallow *Artamus cyanopterus* subspecies *perthi*

Black-faced Woodswallow *Artamus cinereus*

Grey Butcherbird *Cracticus torquatus* subspecies *leucopterus*

Grey Currawong *Strepera versicolor* subspecies *plumbea*

Australian Magpie *Gymnorhina tibicen* subspecies *dorsalis*

Australian Raven *Corvus coronoides* subspecies *preplexus*

Red-Eared Firetail *Stagonopleura oculata*

Australian Pipit *Anthus novaeseelandiae* subspecies *australis*

Mistletoebird *Diccaeaum hirundinaceum*

White-Backed Swallow *Cheramoeca leucosternus*

Welcome Swallow *Hirundo neoxena* subspecies *cateri*

Tree Martin *Hirundo nigricans* subspecies *neglecta*

Fairy Martin *Hirundo ariel*

Rufous Songlark *Cincloramphus mathhewsi*

Brown Songlark *Cincloramphus cruralis*

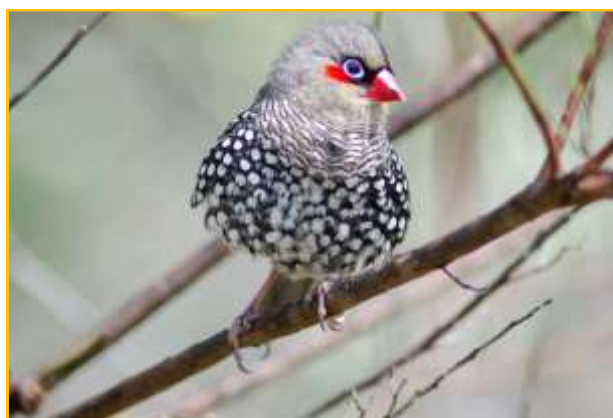
Silvereye *Zosterops lateralis* subspecies *chloronotus*



Varied Sittella



Southern-Scrub Robin



Red-Eared Firetail



White-Eared Honeyeater



White-Fronted Chat



Spotted Pardalote



Striated Pardalote

Avian Species Recorded Nesting within the Road Verge Vegetation Systems along the Boxwood Hill - Ongerup Road

During the extensive meandering style survey activities conducted between the Months of July 2007, August-December 2009, September - December 2010, July - November 2012, September 2013, July - October 2015 and May- June 2016, 54 Avian species were recorded nesting with a total of 138 nests documented, The Species and the number of nest recorded are as follows.

Brown Goshawk *Accipiter fasciatus fasciatus* **1 nest**

Black-Fronted Dotterel *Euseyornis melanops* **1 nest**

Banded Lapwing *Vanellus tricolor* **2 nests**

Common Bronzewing *Phaps chalcopters* **6 nests**

Brush Bronzewing *Phaps elegans* subspecies *occidentalis* **1 nest**

Crested Pigeon *Ocyphaps lophotes* **4 nests**

Pallid Cuckoo *Cuculus pallidus* **1 nest** (host species Yellow-Throated Miner)

Fan-Tailed Cuckoo *Cacomantis flabeliformis* **2 nests** (host species White-browed Scrubwren)

Horsfield's Bronze-Cuckoo *Chrysococcyx basalis* **1 nest** (host species Blue-Breasted Fairy-Wren)

Shinning Bronze-Cuckoo *Chrysococcyx lucidus* subspecies *plagosus* **2 nests** (host species Yellow-rumped Thornbill)

Tawny Frogmouth *Podargus strigoides* subspecies *brachypterus* **2 nests**

Splendid Fairy-Wren *Malurus splendens* subspecies *splendens* **2 nests**

Blue-Breasted Fairy-Wren *Malurus pulcherrimus* **2 nests**

Southern Emu-Wren *Stipiturus malachurus* subspecies *westernensis* **1 nest**

White-Browed Scrubwren *Sericornis frontalis* **1 nest**

Shy Heathwren *Hylacola cauta* subspecies *whitloki* **1 nest**

Weebill *Smicronis brevirostris* subspecies *occidentalis* **4 nests**

Western Gerygone *Gerygone fusca* subspecies *fusca* **1 nest**

Inland Thornbill *Acanthiza apicalis* **1 nest**

Yellow-Rumped Thornbill *Acanthiza chrysorrhoa chrysorrhoa* **6 nests**

Spotted Pardalote *Pardalotus punctatus* subspecies *Xanthopyge* **2 nests**



Red Wattlebird

34 12 934 S 118 39 117 E



Tawny-Crowned Honeyeater

34 12 531 S 118 38 441 E



Grey Butcherbird

34 12 863 S 118 39 105 E



Grey Currawong

34 13 014 S 118 39 091 E



Yellow-throated Miner

34 12 965 S 118 38 956

Striated Pardalote *Pardalotus striatus* subspecies *substriatus* **1 nest**

Red Wattlebird *Anthochaera carunculata* subspecies *woodwardi* **3 nests**

Western Wattlebird *Acanthagenys rufogularis* **4 nests**

Yellow-Throated Miner *Manorina flavigula* subspecies *wayensis* **4 nests**

Singing Honeyeater *Lichenostomus virescens virescens* **1 nest**

White-Eared Honeyeater *Lichenostomus leucotis* subspecies *novaenoriae* **1 nest**

Purple-Gaped Honeyeater *Lichenostomus cratitus* subspecies *occidentalis* **4 nests**

Brown-Headed Honeyeater *Meliphreptus brevirostris* subspecies *magnirostris* **2 nests**

Brown Honeyeater *Lichmera indistincta* **6 nests**

New-Holland Honeyeater *Phylidonyris novaehollandiae* subspecies *longirostris* **10 nests**

Tawny-Crowned Honeyeater *Phylidonyris melanops melanops* **6 nests**

Western Spinebill *Acanthorhynchus superciliosus* **1 nest**

White-Fronted Chat *Epthianura albifrons* **1 nest**

White-Browed Babbler *Pomatostomus superciliosus* **6 nests**

Western Whipbird *Psophodes nigrogularis* **3 nests**

Varied Sittella *Daphoenositta chrysoptera* subspecies *pileata* **1 nest**

Golden Whistler *Pachycephala pectoralis* subspecies *fuliginosa* **1 nest**

Rufous Whistler *Pachycephala rufiventris rufiventris* **2 nests**

Grey shrike Thrush *Colluricincla harmonica* subspecies *rufiventris* **1 nest**

Grey Fantail *Rhipidura fuliginosa* subspecies *preissi* **3 nests**

Magpie-Lark *Grallina cyanoleuca cyanoleuca* **1 nest**

Willie Wagtail *Rhipidura leucophrys leucophrys* **6 nests**

Red-Capped Robin *Petroica goodenovi* **1 nest**

Southern Scrub - Robin *Drymodes brunneopygia* **3 nests**



Australian Magpie-Lark

34 14 063 S 118 40 981 E



Australian Magpie

34 14 883 S 118 42 084 E



Silvereye

34 13 769 S 118 40 316 E



Grey Fantail

34 13 761 S 118 40 318 E



Silvereye

34 12 928 S 118 39 132 E



Western Whipbird

34 13 792 S 118 40 473 E



Purple-Gaped Honeyeater

34 14 224 S 118 41 206 E



Black-Faced Woodswallow

34 13 810 S 118 40 456 E

Black-Faced Cuckoo-shrike *Coracina novaehollandiae* subspecies *melanops* **2 nests**

White-Winged Triller *Lalage sueuril* subspecies *tricolor* **2 nests**

Black-Faced Woodswallow *Artamus cinereus* **2 nests**

Dusky Woodswallow *Artamus cyanopterus* subspecies *perthi* **1 nest**

Grey Butcherbird *Cracticus torquatus* subspecies *leucopterus* **1 nest**

Grey Currawong *Strepera versicolor* subspecies *plumbea* **2 nests**

Australian Magpie *Gymnorhina tibicens* subspecies *dorsalis* **4 nests**

Australian Raven *Corvus coronoides* subspecies *perplexus* **2 nests**

Silvereye *Zosterops lateralis* subspecies *chloronotus* **6 nests**



Willie Wagtail

34 13 276 S 118 39 453 E



Purple-Gaped Honeyeater

34 13 610 S 118 39 990 E



Varied Sittella

34 14 117 S 118 41 073 E



Black-Faced Cuckoo Shrike

34 14 265 S 118 41 283 E



Golden Whistler

34 12 924 S 118 39 121 E



Australian Raven

34 12 909 S 118 39 135 E



Tawny-Crowned Honeyeater

34 13 492 S 118 39 743 E



Common Bronzewing

34 13 614 S 118 39 995 E



Southern Scrub-Robin

34 14 205 S 118 41 231 E



White Winged Triller

34 13 470 S 118 39 734 E



New-Holland Honeyeater

34 13 350 S 118 39 581 E



New-Holland Honeyeater

34 13 482 S 118 38 734 E

Reptile, Frog and Mammals observed within and beyond the Road verge Vegetation Systems along the Boxwood Hill - Ongerup Road

In conjunction with the Avian Fauna Surveys, visual identification (Observation) surveys were employed to identify the Reptiles, Frogs and Mammal Species that directly or indirectly utilized the Road Verge Vegetation Systems along the Boxwood Hill - Ongerup Road.

Reptile Species List

Western Marbled Gecko *Cristinus marmoratus*

South-Western Clawless Gecko *Crenadactylus ocellatus ocellatus*

Wheatbelt Stone Gecko *Diplodactylus granariensis granariensis*

Orange-eyed Southwestern Spiny-tailed Gecko *Strophurus spinigerus inornatus*

Barking Gecko *Underwoodisaurus milii*

Western Granite Worm Lizard *Aprasia pulchella*

Southwestern Sandplain Worm Lizard *Aprasia repens*

Marble-faced Delma *Delma australis*

Fraser's Delma *Delma fraseri*

Southern Scaly Foot *Pygopus nigriceps*

Ornate Crevice Dragon *Ctenophorus ornatus*

Western Bearded Dragon *Pogona minor minor*

Eastern Heath Dragon *Rankinia adalaidensis chapmani*

Southern Heath Monitor *Varanus rosenbergi*

Southwestern Cool Skink *Acritoscincus trilineatum*

Cream-striped Fence Skink *Cryptoblepharus virgatus clarus*

Odd-striped Ctenotus *Ctenotus impar*

Jewelled Sandplain Ctenotus *Ctenotus gemmula*

Red-Legged Ctenotus *Ctenotus labillardieri*

Southern Five-toed Mulch Skink *Hemiergis initalis initalis*

Four-toed Mulch Skink *Hemiergis peronii peronii*

Southwestern Four-toed Lerista *Lerista distinguenda*

Common Dwarf Skink *Menetia greyii*

Shrubland Pale-flecked Morethia

Western Bluetongue *Tiliqua occipitalis*

Western Bluetongue *Tiliqua rugosa rugosa*

Southwestern Blind Snake *Ramphotyphlops australis*

Southern Carpet Python *Morelia spilota imbricate*

Bardick *Echiopsis curta*

Tiger Snake *Notechis scutatus*

Gould's Hooded Snake *Parasuta gouldii*

Black-backed Hooded Snake *Parasuta nigriceps*

Dugite (Spotted Brown Snake) *Pseudonaja affinis affinis*

Frog Species List

Quacking Frog *Crinia Georgianna*

Bleating Froglet *Crinia pseudinsignifera*

Western Banjo Frog *Limnodynastes dorsalis*

Turtle Frog *Myobatrachus gouldii*

Spotted-thighed Frog *Litoria cyclorhyncha*

Mammal Species List

Short-beaked Echidna *Tachglossus oculatus*

Western Pigmy- Possum *Cercartetus concinnus*

Honey Possum *Tarsipes rostratus*

Western Grey Kangaroo *Macropus fuliginosus*

Western Brush Wallaby *Macropus Irma*

Introduced (feral) Mammal Species List

House Mouse *Mus musculus*

Fox *Vulpes vulpes*

Cat *Felis catus*

Rabbit *Oryctolagus cuniculus*

Fauna Survey Results and Discussion

Since July 2007 the Author has been conducting Extensive and Systematic Fauna Surveys along the vegetated road network systems between the Stirling Range National Park and the Fitzgerald River National park.

Fauna Survey activities were carried out along the Boxwood Hill-Ongerup Road from July 2007 to June 2016 with the key objectives of recording and documenting the Faunal Assemblages that utilize the Road verge Vegetation systems.

A total of 110 Avian Species were recorded utilizing the road verge vegetation systems along the Boxwood Hill-Ongerup Road, of these 54 Species were recorded breeding including 11 Honeyeater Species. Survey results also indicate that the New-Holland Honeyeater was found to nest during most months of the year and represented the most abundant Avian species within the key survey sites.

The Road verge vegetation systems along the Boxwood Hill-Ongerup Road were also found to support healthy breeding populations of the Priority listed Western Whipbird with 25 breeding pairs identified along the 6km stretch of Road from Normans Road to just East of Corackerup Road. The area also supported significant breeding pairs of Crested Bellbirds and Southern Scrub-Robins.

Several other Priority listed Avian Species were also identified utilizing the road verge vegetation systems along the Boxwood Hill-Ongerup road network system, these include Carnaby's Black Cockatoos observed feeding on various Plant, food resources such as *Banksia media*, *Banksia horrida*, and *Hakea corymbosa*, post breeding flocks of between 80 and 120 birds were observed during the months of April and July.

Malleefowl were observed on many occasions along the 6km survey sites of the Boxwood Hill-Ongerup Road with the majority of sightings concentrated at the corner of Normans Road and Boxwood Hill-Ongerup Road, extensive search activities were also conducted within the Road verge Vegetation Systems along the Southern section of the Boxwood Hill-Ongerup Road, with the key objective of identifying and recording active and inactive Malleefowl mounds, none were located during the survey period.

In conjunction with the extensive Avian Fauna Surveys, visual observations on other Faunal Assemblages utilizing the Road verge Vegetation Systems along the Boxwood Hill-Ongerup road were conducted between July 2007 and June 2016.

Based on the Fauna survey results a total of 33 Reptile Species, 5 Frog Species, 5 Native Mammal Species and 4 feral Mammal Species were recorded utilizing the Road verge Vegetation Systems along the Boxwood Hill-Ongerup Road network System.

The Road verge Vegetation Systems along the Boxwood Hill Ongerup Road were found to be of high Ecological significance in that the diverse and rich Plant communities provided important Feeding and breeding sites for a variety of Priority listed Fauna, as well as the area supporting relatively stable Faunal populations especially within the road verge Vegetation Systems.

Current Threatening Processes and Potential Threatening Processes identified within the proposed clearing Zones of the Road Verge Vegetation along Boxwood Hill - Ongerup Road

Throughout the entire process of collecting field based data on the Fauna/ Flora and Vegetation systems within the proposed 6km clearing zones along the Boxwood Hill-Ongerup Road, a number of current and potential threatening processes were identified, these include.

1. **Feral animals**- Predominantly Foxes and Cats were found throughout the survey period, especially between the Agricultural lands and the Southern areas along the Boxwood Hill–Ongerup Road network system, field studies also suggest that feral animal activity increases during vegetation clearing operations and that an integrated pest management program should be introduced during and post clearing operations.
2. **Invasive Weeds**- Weed incursions are a major threat to road verge Vegetation Systems, especially during and post clearing operations, field surveys along the proposed road verge clearing of the Boxwood Hill-Ongerup Road revealed minimal weed activity.
3. **Dieback** - The spread of Dieback is a major threat to all Road verge Vegetation Systems, especially in areas supporting high concentrations of Proteaceous rich plant communities, Dieback Management is a key element in minimising the spread/ contamination of Natural Areas and thus Best Management Practises should be followed during any earth moving activities.

Conclusion and Recommendations

Based on the Authors long-term monitoring surveys on Faunal Assemblages and their reliance on Road verge Vegetation Systems, especially the Boxwood Hill-Ongerup Road, that the area was found to supports a significantly rich and diverse range of Mallee and sub-Mallee habitat systems with a high degree of Proteaceous rich plant communities.

In support of this report Murry Flett senior works supervisor for the Shire of Jerramungup made contact with a Flora Specialist from the Department of Parks and Wildlife (Albany Office).

Sarah Barrett advised that the 1m road verge clearing operation would have minimal impact on the Floristic values along the Road verge Vegetation Systems.

Corackerup Nature Reserve runs parallel to the North of Boxwood Hill-Ongerup Road and is one of the most significant and important Nature reserves Between the Stirling Range National Park and the Fitzgerald River National Park.

the Road verge Vegetation Systems that run Parallel to the Southern end of the Boxwood Hill-Ongerup Road were found to be of high Ecological Significance as these corridor systems provide important linkages to other Reserves and natural un-fragmented habitat systems between the Stirling Range National Park and the Fitzgerald River National Park, these continuous Road verge Vegetation Corridor systems are vital in sustaining genetic diversity between many Faunal Species and populations.

In support of the outcomes of this report it is recommended that **Key Recommendations** be followed, these include.

1. Prior to any clearing operations that all staff involved with this project to undertake training (Green Card) in Dieback Hygiene.
2. All Plant Machinery to be cleaned of introduced soils, weed seeds and other contaminants.
3. All Plant Machinery to be maintained to a standard as not to support fuel/oil leakages that may contaminate Natural Areas
4. The Shire of Jerramungup in consultation with other key stake holders to develop a workable Dieback Management Plan relevant to the future maintenance and Management of the Shires extensive Gravel Road network Systems.
5. Prior to any clearing operations, a Qualified and experienced person in Fauna Management (observer) to be in place to assist in the recovery of any Fauna that may be impacted on during any earth moving operations.
6. Prior to any site rehabilitation/revegetation program post clearing, to consult with a Fauna Specialist to look at promoting/increasing suitable Habitats for Rare, Threatened and priority listed Fauna.
7. Prior to any Road verge Vegetation Clearing operations, all Staff to undertake induction/ training course in sensitive areas vegetation removal.
8. During post clearing operations all cleared vegetation to be stored at a safe and suitable site and where possible any hollow bearing trunks, branches to be saved and integrated back into rehabilitated sites, all other raw material to be mulched and used in the rehabilitation process.

Limitations

This report is based on the results of an extensive on ground systematic Fauna and Flora Survey and Vegetation Assessment of the Road verge vegetation systems along the proposed clearing zones of the Boxwood Hill-Ongerup Road network system.

All research and Surveys were carried out by the Author with a key focus on assessing the Ecological assets within the Road verge Vegetation systems along the proposed clearing zones of the Boxwood Hill-Ongerup Road.

All care and efforts were made in the identification process of identifying the Floristic components within the survey sites, however the timing of the survey in relationship to various plant species not presenting for clear identification allowed for only 70-80 % of all plant species to be identified within the Road Verge Vegetation Systems along the Boxwood Hill- Ongerup Road.

In regards to all Fauna Surveys only visual observations were conducted on the Fauna assemblages utilizing the extensive Road verge Vegetation Systems along the Boxwood Hill-Ongerup Road, Pit-trapping and Cage trapping operations would have assisted in identifying a number of reptile and small Marsupial species not recorded during the visual survey observations.

Acknowledgment's and Reference's

The Shire of Jerramungup and management staff including the CEO Brent Bailey, Murray Flett and office staff.

DER, Department of Environment Regulations (EPA Guidance Statement No 51)

DEPAW, Department of Parks and Wildlife (providing Flora Licence)

Laurie Boyle for assisting in Avian Fauna Surveys within the Great Southern Road Verge network systems.

References

Birds of the Greater South West, Simon J Nevill 2008

The Western Australian South Coast Macro Corridor Network, Conservation and Land Management 2006

Eucalypts of Western Australia's Wheatbelt Malcom French 2012

1982-2016, Breeding Records on the Avian Fauna of South-Western Australia, Steve Elson (unpublished records)

2007-2016 Faunal Assemblage's utilizing road verge vegetation systems of South-Western Australia, Steve Elson (unpublished records)

