

FAUNA ASSESSMENT

NORTH EAST BINNINGUP RESIDENTIAL DEVELOPMENT

Ldt 76

APRIL 2005

On behalf of:

TME

Prepared by:

Greg Harewood B.Sc. (Zoology)

A.B.N. 95 536 627 336

PO Box 755

BUNBURY WA 6231

Mobile: 0402 141 197

Telephone/Facsimile (08) 9725 0982

Email: gharewood@vtown.com.au



TABLE OF CONTENTS

1. INTRODUCTION.....	1
2. METHODOLOGY	1
2.1 HABITAT ASSESSMENT	1
2.2 FAUNA.....	2
2.2.1 Potential Fauna	2
2.2.2 Fauna of Conservation Significance.....	2
2.3 LIMITATIONS OF THE STUDY	4
3. RESULTS.....	4
3.1 HABITAT ASSESSMENT	4
3.2 FAUNA.....	5
3.2.1 Potential Fauna	5
3.2.2 Fauna of Conservation Significance.....	6
4. ECOLOGICAL IMPACTS AND MANAGEMENT	7
4.1 IMPACTS.....	7
4.2 LEGISLATIVE OBLIGATIONS.....	8
4.2.1 Wildlife Conservation Act 1950.....	8
4.2.2 Commonwealth Environmental Protection & Biodiversity Conservation Act 1999.....	8
4.3 MANAGEMENT RECOMMENDATIONS	9
5. REFERENCES.....	11

FIGURES

FIGURE 1: Regional Location

FIGURE 2: North East Binningup Outline Development Plan (TME - 11/11/04)

TABLES

TABLE 1: Western Australian Threatened Fauna Categories

TABLE 2: CALM Priority Fauna Categories

TABLE 3: Summary of Potential Vertebrate Species

TABLE 4: Listed Threatened and Priority Species Potentially Occurring in Study Area

APPENDICES

APPENDIX A Potential Fauna Species List

STATEMENT OF LIMITATIONS

Scope of Services

This fauna assessment report ("the report") has been prepared in accordance with the scope of services set out in the contract, or as otherwise agreed, between the Client and Greg Harewood ("the Author"). In some circumstances the scope of services may have been limited by a range of factors such as time, budget, access and/or site disturbance constraints.

Reliance on Data

In preparing the report, the Author has relied upon data, surveys, analyses, designs, plans and other information provided by the Client and other individuals and organisations, most of which are referred to in the report ("the data"). Except as otherwise stated in the report, the Author has not verified the accuracy or completeness of the data. To the extent that the statements, opinions, facts, information, conclusions and/or recommendations in the report ("conclusions") are based in whole or part on the data, those conclusions are contingent upon the accuracy and completeness of the data. The Author will not be liable in relation to incorrect conclusions should any data, information or condition be incorrect or have been concealed, withheld, misrepresented or otherwise not fully disclosed to the Author.

Environmental Conclusions

In accordance with the scope of services, the Author has relied upon the data and has conducted environmental field monitoring and/or testing in the preparation of the report. The nature and extent of monitoring and/or testing conducted is described in the report.

The conclusions are based upon field data and the environmental monitoring and/or testing carried out over a limited period of time and are therefore merely indicative of the environmental condition of the site at the time of preparing the report. Also it should be recognised that site conditions, can change with time.

Within the limitations imposed by the scope of services, the field assessment and preparation of this report have been undertaken and performed in a professional manner, in accordance with generally accepted practices and using a degree of skill and care ordinarily exercised by reputable environmental consultants under similar circumstances. No other warranty, expressed or implied, is made.



Report for Benefit of Client

The report has been prepared for the benefit of the Client and no other party. The Author assumes no responsibility and will not be liable to any other person or organisation for or in relation to any matter dealt with or conclusions expressed in the report, or for any loss or damage suffered by any other person or organisation arising from matters dealt with or conclusions expressed in the report (including without limitation matters arising from any negligent act or omission of the Author or for any loss or damage suffered by any other party relying upon the matters dealt with or conclusions expressed in the report). Other parties should not rely upon the report or the accuracy or completeness of any conclusions and should make their own enquiries and obtain independent advice in relation to such matters.

Other Limitations

The Author will not be liable to update or revise the report to take into account any events or emergent circumstances or facts occurring or becoming apparent after the date of the report.

The scope of services did not include any assessment of the title to or ownership of the properties, buildings and structures referred to in the report nor the application or interpretation of laws in the jurisdiction in which those properties, buildings and structures are located.

1. INTRODUCTION

This report has been prepared in response to an invitation from Thompson McRobert Edgeloe (TME) to carry out a fauna assessment over the proposed North East Binningup Residential Development adjacent to the existing Binningup townsite. The study site is centred about 20 km north east of Bunbury in the south west of Western Australia at approximately 33° 08' 42" S and 115° 41' 46" E (Figures 1 & 2).

The fauna assessment was limited to the area of the proposed development as indicated on the Outline Development Plan (ODP) dated 11th Nov 2004 (Figure 2) and includes the area shown as "Subject to Further Investigation". The study area totals about 21 hectares.

The objectives of the fauna assessment reported on here are:

- Conduct a desktop analysis and field survey to determine the fauna composition of the area (no trapping) with specific reference to government listed threatened and priority species.
- Document the impacts on fauna as a result of the proposed works.
- Recommend best practice management techniques to minimise impacts on endemic or protected fauna.
- Recommend any requirements that the proponent must follow under the federal Environmental Protection and Biodiversity Conservation Act 1999 and the Wildlife Conservation Act 1950.
- Conduct services in accordance with the best-practise flora and fauna surveys.

The assessment was carried out with reference to guidance and position statements published by the WA Environmental Protection Authority on fauna surveys and environmental protection (EPA, 2002; EPA 2004), and Commonwealth Biodiversity Legislation (EPBC Act, 1999).

2. METHODOLOGY

2.1 HABITAT ASSESSMENT

A habitat assessment was carried out specifically targeting the likely habitats of listed (under the relevant Federal and State Acts) threatened vertebrate species potentially occurring in the general area. The aim of the habitat assessment was to determine if it was likely that any of the threatened species would be utilising the areas that will be impacted on as a consequence of the proposed development.



The initial phase of the assessment involved the review of available information on the habitats of the threatened species possibly occurring in the region. During the field survey the habitat at the site was assessed to determine its potential to be hosting any of the listed threatened species in addition to aiding in the compilation of an potential fauna list based on available habitats and opportunistic observations.

2.2 FAUNA

2.2.1 Potential Fauna

A list of all vertebrate fauna potentially occurring within the study area was compiled from searches done on the WA Museum Database, the Department of Conservation and Land Managements Threatened Fauna Database, Department of the Environment and Heritage Departments Commonwealth Environment Protection and Biodiversity Conservation Database, published and unpublished reports and specialist books detailing fauna of the general area. Species observed during field work have also been included. The results of the habitat assessment also provided valuable information on the potential fauna assemblage.

Taxonomy and nomenclature for fauna species used in this report generally follow Aplin and Smith (2001) for amphibians and reptiles, How *et al.* (2001) for mammals and Johnstone (2001) for birds. Some names, including common names recommended for national and international use by Christidis and Boles (1994) for birds, are also used.

2.2.2 Fauna of Conservation Significance

The conservation status of fauna species in Western Australia is assessed under the federal *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and the state administered *Western Australian Wildlife Conservation Act 1950* (WAWC Act).

Under the EPBC Act threatened fauna may be listed in any one of the following categories as defined in Section 179 of the Act:

- Extinct;
- *Extinct in the wild;
- *Critically endangered;
- *Endangered;
- *Vulnerable; and
- Conservation dependent.



*Only species in those categories marked with an asterisk are matters of national environmental significance under the EPBC Act.

The WAWC Act uses a set of schedules (see Table 1) in addition to utilising the categories defined by the EPBC Act.

Table 1: Western Australian Threatened Fauna Categories

Category	Code	Description
Schedule 1	S1	Fauna which is rare or likely to become extinct
Schedule 2	S2	Fauna which is presumed extinct
Schedule 3	S3	Birds which are subject to an agreement between the governments of Australia and Japan (JAMBA) relating to the protection of migratory birds and birds in danger of extinction
Schedule 4	S4	Fauna that is otherwise in need of special protection

In Western Australia, the Department of Conservation and Land Management (CALM) also produce a supplementary list of priority fauna. The species listed are not considered threatened under the WAWC Act, but due to lack of knowledge or where species are poorly represented in secure conservation reserves some concern for there long term survival exists. The five classifications levels are shown in Table 2.

Table 2: CALM Priority Fauna Categories

Category	Code	Description
Priority 1	P1	Taxa with few, poorly know populations on threatened lands.
Priority 2	P2	Taxa with few, poorly known populations on conservation lands.
Priority 3	P3	Taxa with several, poorly known populations, some on conservation lands.
Priority 4	P4	Taxa in need of monitoring (Not currently threatened or in need of special protection, but could be if present circumstances change)
Priority 5	P5	Taxa in need of monitoring (Not considered threatened but are subject to a specific conservation program, the cessation of which would result in the species becoming threatened within five years)

The EPBC Act also requires the compilation of a list of migratory species that are recognized under international treaties including the Japan Australia Migratory Bird Agreement (JAMBA), the China Australia Migratory Bird



Agreement (CAMBA) and the Bonn Convention (The Convention on the conservation of Migratory Species of Wild Animals). Species listed under JAMBA are also protected under Schedule 3 of the WAWC Act.

The conservation status of all the vertebrate fauna species listed as occurring or possibly occurring in the vicinity of the study area have been assessed using the most recent lists published in accordance with the above-mentioned Acts and CALM's priority fauna list.

2.3 LIMITATIONS OF THE STUDY

The fauna assessment has been limited to a desktop analysis aimed at providing a list of expected species and a site visit primarily aimed at general habitat assessment targeting listed threatened species. Opportunistic observations, made during a one day site visit, have been included but no fauna trapping or seasonal sampling has been conducted.

In recognition of these survey limitations a precautionary approach has been adopted for this assessment. Any species that would potentially occur within the study area as identified through ecological databases, publications and the habitat knowledge of the Author has been assumed to potentially occur in the study area. The discussion of potential impacts and mitigation measures also reflect this precautionary approach.

3. RESULTS

3.1 HABITAT ASSESSMENT

A site survey and habitat assessment was conducted on the 10th April 2005 by Greg Harewood.

The project area is situated on the extreme western margin of the southern-central part of the Swan Coastal Plain. The Swan Coastal Plain Bioregion (SWA) was classified as part of the Interim Biogeographical Regionalisation for Australia and is in broad terms described as a:

"Low lying coastal plain mainly covered with Woodlands. It is dominated by Banksia or Tuart on sandy soils, *Allocasuarina obesa* on outwash plains, and paperbark in swampy areas. In the east, the plain rises to duricrusted Mesozoic sediments dominated by Jarrah Woodland. Warm Mediterranean. Three phases of marine sand dune development provide relief. The outwash plains, once dominated by *A. obesa* – Marri Woodlands and Melaleuca shrublands, are extensive only in the south." (Thackway and Cresswell, 1996; IBRA, 2000).

The site lies on the eastern margin of the Quindalup Dunes System (Safety Bay sand) and consists of relatively subdued parabolic dunes composed of uniform calcareous sands. The area has a number of low hills and rises, with moderate



to steep slopes and some seasonally damp depressions. One small section of the study site in the north east appears to be subject to seasonal inundation.

The vegetation is typical of the landform type for this area and consists largely of an open woodland of *Eucalyptus gomphocephala* (Tuart) over *Agonis flexuosa* (Peppermint). Some areas apparently subject to the previous clearing are dominated by shrubland of regrowth *Acacia* sp or very open grasslands dominated by introduced grass species. Several, relatively small interdunal depressions scattered across the site typically form a closed sedgeland dominated by a dense covering of *Juncus* sp and/or *Lepidosperma* sp. with emergent *Agonis flexuosa*. The seasonally inundated area mentioned previously has emergent *Melaleuca* sp.

The study site appears to have been subject to varying amounts of disturbance in the past including a small amount of logging, grazing and "parkland" clearing. Currently the area is unused except by bushwalkers, motorcycle riders, 4WD's and for the illegal disposal of rubbish and car bodies.

Overall the area provides good habitat for a wide range of species. The area contains a significant number of "habitat" trees with numerous small to medium hollows suitable for obligate hollow nesters. A small number of the larger tuart trees (some dead) also have the potential to have large sized hollows (openings >15cm and up to 2m deep), suitable for the larger parrot and owl species. Fallen logs (some with hollows) are uncommon. Substantial leaf litter has accumulated in some areas and the dense vegetation in some of the interdunal depressions provides potential habitat for small to medium size fauna species. The seasonally inundated area in the north east of the study area also has the potential to provide suitable feeding and breeding habitat for a number of species.

The results of the habitat assessment suggest that the site is very likely to provide suitable habitat for a significant number of the fauna species known to be endemic to the general area. The site also have the potential to host a number of listed threatened and priority species, the area providing suitable habitat for foraging, roosting and breeding.

3.2 FAUNA

3.2.1 Potential Fauna

Table 3 summarises the numbers of potential species based on vertebrate class. A complete list of vertebrate fauna possibly inhabiting or frequently the study area is held in Appendix A. Waterbirds listed are those that are likely to visit upland habitats for foraging or breeding.

Details on specially protected and priority species expected and/or listed as potentially occurring in the general area are given in the section 3.2.2.



Not all species listed as potentially occurring within the study area (based on searches of the EPBC Act's Threatened Fauna and Migratory species lists, CALM's Threatened Fauna Database and various publications) are shown in the expected listing in Appendix A. Some species have been excluded from this list based largely on the lack of suitable habitat at the study site and in the general area.

Table 3: Summary of Potential Fauna Species (As listed in Appendix A)

Group	Total number of potential species	Number of specially protected species	Number of priority /migratory species	Number of species observed (10/04/2005)
Fish	Not determined	0	1	0
Amphibians	5	0	0	0
Reptiles	35	1	0	0
Birds	87	3	3	22
Mammals	23	1	3	0

3.2.2 Fauna of Conservation Significance

A search of EPBC Act's Threatened Fauna list, CALM's Threatened Fauna Database and Priority List and scientific publications identified 15 specially protected, priority or migratory fauna species as potentially occurring in the general study area. A brief account of these species with details on their distribution and habitat preference are given in Table 4.



Table 4: Listed Threatened and Priority Fauna Species Potentially Occurring in Study Area.

Common Name/Species	EPBC Act	WAWC Act	CALM Priority	Habitat, Historical Records and Potential of Occurrence in Study Area
Black-striped Minnow <i>Galaxiella nigrostriata</i>			P3	This species typically occurs in shallow isolated pools in peat flats surrounding forested areas. This species is known to occur nearby and could be present in the seasonally inundated area located in the north east of the study area.
Southern Carpet Python <i>Morelia spilota imbricata</i>		S4	P4	This species occurs in forested areas particularly where birds, reptiles and small to medium mammals are present. It occurs across much of the south west. May occur in the study area at low densities.
Great Egret <i>Ardea alba</i>	Migratory (CAMBA, JAMBA)			This species may very occasionally utilise the small seasonal wetland present in the north east of the study area but is very unlikely to breed at this location.
Cattle Egret <i>Ardea ibis</i>	Migratory (CAMBA, JAMBA)			This species may very occasionally utilise the small seasonal wetland present in the north east of the study area but is very unlikely to breed at this location.
White-bellied Sea Eagle <i>Haliaeetus leucogaster</i>	Migratory (CAMBA)			White-bellied sea eagles are common in coastal and near coastal areas of Australia. They nest and forage mainly near the coast but will also live near large rivers and lakes inland, often moving on a seasonal basis. White-bellied Sea-Eagles build a large stick nest, which is used for many seasons in succession. The species may use the general area for foraging but impacts from the proposed development are unlikely due to its widespread distribution and transient behaviour.
Peregrine Falcon <i>Falco peregrinus</i>		S4		This species is uncommon and prefers areas with rocky ledges, cliffs, watercourses, open woodland or margins with cleared land. It may occur in the area in question though no large nests of any birds of prey were observed in the study site.
Baudin's Black-Cockatoo <i>Calyptorhynchus baudinii</i>	Vulnerable	S1		This species is a seasonal visitor to the northern forests and the coastal plain, feeding on seeds of eucalypts and other proteaceous species. It breeds in spring/summer in the southern forests, nesting in tree hollows (primarily Marri). It may visit the site infrequently.
Carnaby's Black-Cockatoo <i>Calyptorhynchus latirostris</i>	Endangered	S1		This species moves around in seasonal flocks to feeding areas in proteaceous scrubs and heaths and eucalypt woodlands as well as pine plantations. Breeding occurs in winter/spring mainly in eastern forest and wheatbelt where they can find mature hollow bearing trees to nest in. It may visit the site infrequently.
Fork-tailed Swift <i>Apus pacificus</i>	Migratory (CAMBA, JAMBA)			The Fork-tailed Swift is listed as migratory under the EPBC Act and under international agreements to which Australia is a signatory. It may be a very occasional summer visitor (October to April) to the study area but is entirely aerial and largely independent of terrestrial habitats.
Rainbow Bee-eater <i>Merops ornatus</i>	Migratory (JAMBA)			This common species is a regular summer migrant to southern Australia (September to April) and breeds underground during this period in areas of suitable soft soil firm enough to support tunnel building. It is a likely visitor to the general area.
Chuditch <i>Dasyurus geoffroi</i>	Vulnerable	S1		This carnivorous marsupial occupies large home ranges, is highly mobile and appears to utilise bush remnant and corridors. Records in surrounding areas suggest that this species may occur in the area in question infrequently.
Brush-tailed Phascogale <i>Phascogale tapoatafa</i>			P3	This arboreal marsupial occurs in forest and woodland where suitable tree hollows are available. Populations fluctuate dramatically in response to invertebrate prey abundance. It could possibly occur in the area in question
Western Ringtail Possum <i>Pseudocheirus occidentalis</i>	Vulnerable	S1		This species is rare in Peppermint dominated woodlands in this area of the south west. It may possibly occur in the general area in low numbers. No scats or dreys were found within the study area during the site survey and it not to be present.
Quenda <i>Isoodon obesulus fusciventer</i>			P5	This species prefers areas with dense understory vegetation, particularly around swamps and along watercourses that provide ample protection from predators. Observations made during site survey suggest this species may possibly be present in study area in low numbers.
Western False Pipstrelle <i>Falsistrellus mackenziei</i>			P4	This species of bat occurs in high jarrah forest and coastal woodlands. It roosts in small colonies in tree hollows and forages in the cathedral-like spaces between trees. It has been found previously at Kemerton and may be present at the study site.

4. ECOLOGICAL IMPACTS AND MANAGEMENT

4.1 IMPACTS

The proposed works will require the clearing of vegetation and consequently the loss or degradation of potential fauna habitat. The most significant habitat components that maybe impacted on are hollow-bearing trees, dense vegetation within interdunal depressions and the seasonal wetland present in the north east of the study area (not within current development plan). The removal of mature hollow-bearing trees will result in the loss of perching, foraging and nesting resources for a variety of bird and mammal species that may be present in the area. The disturbance of the dense interdunal vegetation will reduce the availability of habitat specifically suited to the Quenda, which may inhabit the site.

Despite a concerted effort during the course of the opportunistic fauna survey no signs of the Western Ringtail Possum (*Pseudocheirus occidentalis*) were found despite the presence of significant areas of apparently suitable habitat (significant areas of Peppermint). These results suggest that this possum species is only present in very low numbers or that it is locally extinct.

Should be on list in App. A.

Based on the habitat assessment it would appear that besides those species mentioned above, a number of other the listed threatened and priority species very likely use the site for foraging, roosting and possibly breeding. The potential impact on these species will vary depending on population densities and the quantity and quality of potential foraging and breeding sites. Most are wide ranging species and it is anticipated that with the implementation of suitable management procedures the impact will be minimal. Displaced animals should be able to be absorbed into the surrounding, unaffected habitat.

The small seasonal wetland present in the north east section of the study site (within the area subject to further investigation) should be retained if possible as it could be utilised by the priority 3 Black-stripe Minnow.

The proposed subdivision will inevitably result in an increase in the loss of individual fauna as a result of vehicle impacts though it is unlikely to be significant enough to affect the conservation status of any of the species in the area. The proposed development may also restrict the movement of some species but again not to a significant level. An increase in the number of predatory introduced species (principally cats) may occur as a result of the development.

In relation to the common endemic fauna species, the proposed works are unlikely to result in a significant impact on their status in the general area. Considerable areas of similar habitats are available directly adjacent to the



proposed site and populations will persist in these locations and in areas set aside for POS.

4.2 LEGISLATIVE OBLIGATIONS

4.2.1 Wildlife Conservation Act 1950

The objective of the *Wildlife Conservation Act 1950* is to provide for the protection of wildlife. The Act is administered by the Executive Director of the Department of Conservation and Land Management, under the direction and control of the Minister for the Environment. Under section 14, "Protection of fauna", of this Act, all fauna is wholly protected throughout the State at all times, unless declared by the Minister by notice in the Government Gazette. Under section 14(2)(ba) of The Act, Fauna Notices are made by the Minister for the Environment listing specially protected fauna.

Disturbance or destruction of any native fauna over and above that reasonably required for construction works and access is considered an offence under the Act and the developer should take the necessary steps to inform construction personal of this fact.

4.2.2 Commonwealth Environmental Protection & Biodiversity Conservation Act 1999

The objective of the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* is to provide for the protection of the environment, especially those aspects that are of national significance, promote ecologically sustainable development, the conservation of biodiversity and a cooperative approach to the protection and management of the environment.

Under Section 18 of the Act - Actions with significant impact on listed threatened species or endangered community are prohibited without approval:

"1) A person must not take an action that: has or will have a significant impact on a listed threatened species included in the endangered category; or is likely to have a significant impact on a listed threatened species included in the endangered category."

"Under Section 18A – Offences relating to threatened species, the Commonwealth may pursue criminal conviction. In the case of a conviction a person or corporation is punishable by imprisonment or fine."

If an action is deemed to have a potential significant impact on listed species a referral to the Department of Environment and Heritage (DEH) is required.

Taking into consideration the EPBC Act guideline criteria and the management recommendations it is considered by the author that the proposed action (the



residential development) will not result in a significant impact to any EPBC Act listed threatened or migratory species and therefore no referral will be required with respect to fauna species potentially inhabiting the area of the proposed development.

4.3 MANAGEMENT RECOMMENDATIONS

The following proposed management plan specifically aims to reduce the chance of fauna being killed or injured during the course of the proposed project.

It is recommended that:

- Areas requiring clearing should be clearly marked and access to other areas restricted to prevent accidental clearing of areas to be retained as POS.
- Hollow bearing trees should be left undisturbed if possible. If possible potential habitat trees should be checked for fauna prior to clearing. No dead, standing or fallen timber should be removed unnecessarily.
- A number of logs (hollow or not) and other debris resulting from land clearing should be used to enhance fauna habitat in untouched and rehabilitated areas if possible.
- A Construction and Operations Fire Management Plan should be prepared to reduce the risk of unplanned fires and provide contingency measures to minimise any associated impacts. The plan will include a contingency and response plan in the event of any bushfires that commence as a result of the construction works.
- All construction staff should be made aware that native fauna is protected. Personnel working on the project should not be allowed to bring firearms, other weapons or pets onsite.
- Native fauna injured during construction should be taken to a designated veterinary clinic or a CALM nominated wildlife carer.
- A suitably qualified fauna spotter should be employed during the clearing process to aid in the identification of trees or patches of vegetation containing significant species prior to being felled or cleared. Any fauna found within areas to be subsequently cleared should be removed and relocated to safe areas nearby if possible.
- During the installation of services pipe trenches should be kept open for only as long as necessary and suitable escape ramps and bridging provided if the site is to be left unattended for extended periods.



- Whenever possible pipe ends should be sealed to prevent fauna entering.



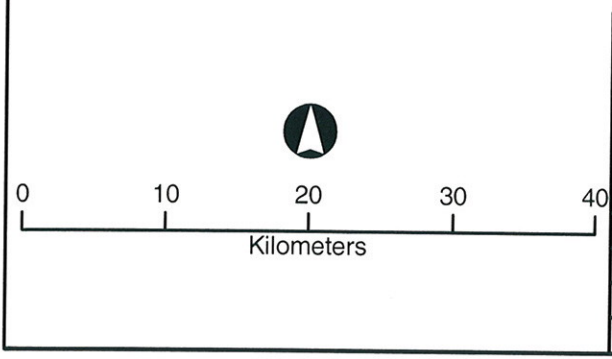
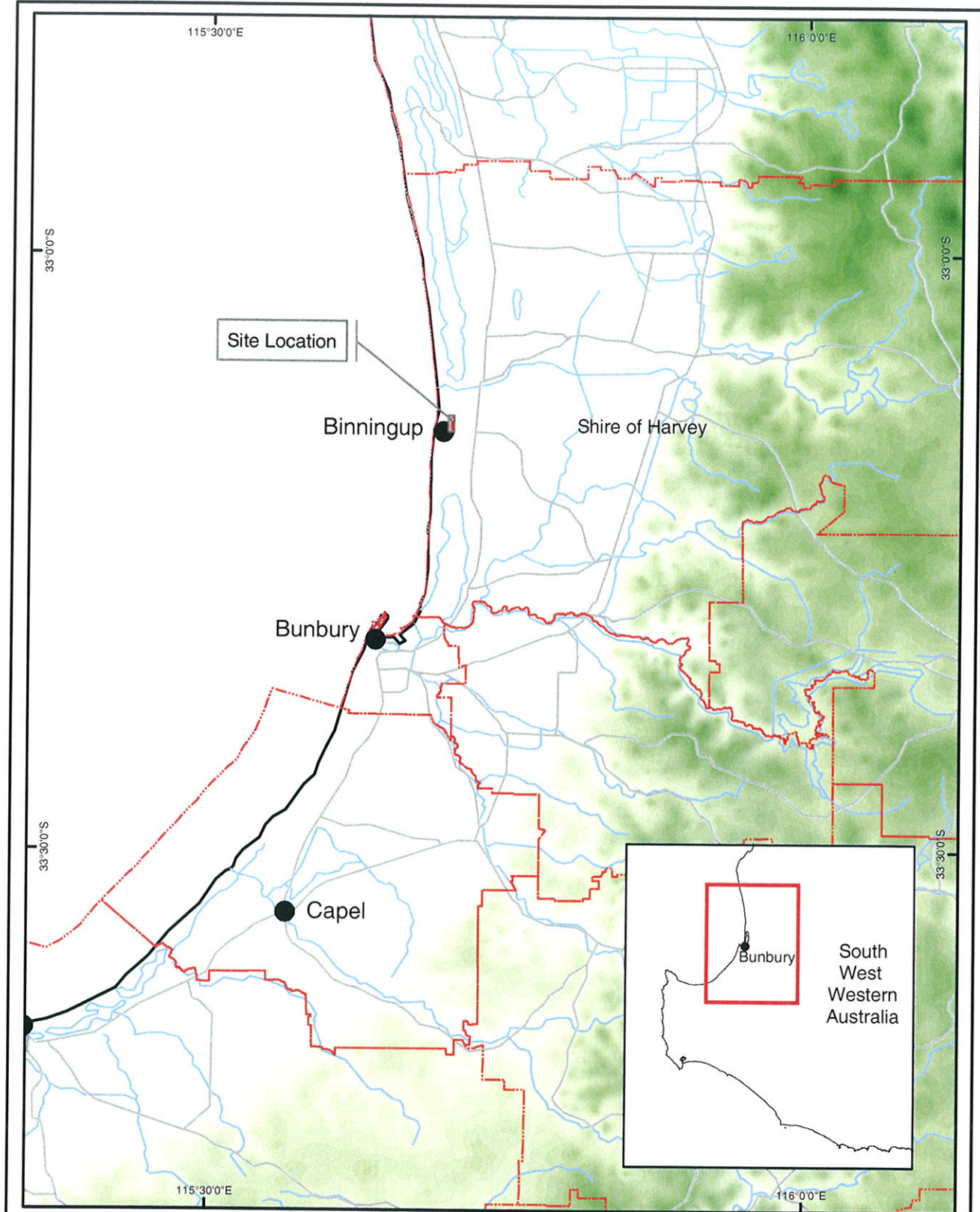
5. REFERENCES


- Aplin, K.P. and Smith, L.A. (2001). Checklist of the frogs and reptiles of Western Australia, Records of the Western Australian Museum Supplement No. 63, 51-74.
- Christidis, I. and Boles, W.E. (1994). The Taxonomy and Species of Birds of Australia and its Territories. RAOU, Monograph 2.
- Barrett, G. *et al* (2003). The New Atlas of Australian Birds. Royal Australian Ornithologists Union, Hawthorn East.
- Environmental Protection Authority (2002). Terrestrial Biological Surveys As An Element of Biodiversity Protection. Position Statement No. 3. EPA, Perth,
- Environmental Protection Authority (2004). Guidance for the Assessment of Environmental Factors - Terrestrial fauna surveys for environmental impact assessment in Western Australia. Guidance Statement No 56 EPA, Perth
- How, R., Cooper, N.K. and Bannister, J.L. (2001). Checklist of the mammals of Western Australia, Records of the Western Australian Museum Supplement No. 63, 91-98.
- Johnstone, R.E. (2001). Checklist of the birds of Western Australia, Records of the Western Australian Museum Supplement No. 63, 75-90.
- Johnstone, R.E. and Storr, G.M. (1998). Handbook of Western Australian Birds: Volume 1 – Non-passerines (Emu to Dollarbird). Western Australian Museum, Perth Western Australia.
- Mennkhorst, P. and Knight, F. (2001). A Field Guide to the Mammals of Australia. Oxford University Press, Melbourne
- Simpson, K. and Day, N. (1996). Field Guide to the Birds of Australia. Penguin Books, Ringwood.
- Storr, G.M., Smith, L.A. and Johnstone R.E. (1983). Lizards of Western Australia II: Dragons and Monitors. WA Museum, Perth.
- Storr, G.M., Smith, L.A. and Johnstone R.E. (1983). Lizards of Western Australia III: Geckos and Pygopods. WA Museum, Perth.
- Storr, G.M., Smith, L.A. and Johnstone R.E. (1999). Lizards of Western Australia I: Skinks. Revised Edition, WA Museum, Perth.
- Storr, G.M., Smith, L.A. and Johnstone R.E. (2002). Snakes of Western Australia. Revised Edition, WA Museum, Perth.



Thackway, R. and Cresswell, I.D. (1995). An Interim Biogeographic Regionalisation for Australia. Australian Nature Conservation Agency, Canberra.

FIGURES




Fauna Assessment

DRAWN: G Harewood
 DATE : April 2005
 SCALE: 1: 500,000
 REF :

North East Binningup
 Residential Development

REGIONAL LOCATION

Figure: 1

APPENIDIX A

POTENTIAL FAUNA SPECIES LIST

5 bird spp. 10 sig. in 200
 ex (hol, h20) due to 1 road ...

Fauna Expected in Study Area

North East Binningup Development

Class	Common	Conservation	Sighted
Family	Name	Status	April 05
Species			

Fish

Galaxiidae

Galaxiids

Galaxiella nigrostriata

Black-striped Minnow

P3

||

Amphibians

Myobatrachidae

Ground or Burrowing Frogs

Crinia insignifera

Squelching Froglet

||

Heleioporus eyrei

Moaning Frog

U

Heleioporus psammophilus

Sand Frog

□

Limnodynastes dorsalis

Banjo Frog

□

Pseudophryne guentheri

Güenther's Toadlet

||

Reptiles

Gekkonidae

Geckoes

Phyllodactylus marmoratus

Marbled Gecko

||

Pygopodidae

Legless Lizards

Aprasia repens

Sandplain Worm Lizard

||

Lialis burtonis

Burtons Legless Lizard

U

Pygopus lepidopus

Common Scalefoot

□

Agamidae

Dragon Lizards

Pogona minor

Bearded Dragon

||

Varanidae

Monitor's or Goanna's

Varanus gouldii

Goulds Sand Monitor

□

Varanus rosenbergi

Rosenbergs Monitor

||

*=introduced species



Class	Family	Species	Common Name	Conservation Status	Sighted April 05
Scincidae					
Skinks					
		<i>Acritoscincus trilineatum</i>	Swamp Skink		U
		<i>Cryptoblepharus plagiocephalus</i>	Fence Skink		U
		<i>Ctenotus australis</i>	Western Limestone Ctenotus		U
		<i>Ctenotus impar</i>	South-western Odd-striped Ctenotus		U
		<i>Ctenotus labillardieri</i>	Red-legged Skink		U
		<i>Egernia kingii</i>	Kings Skink		U
		<i>Egernia luctuosa</i>	Mourning Skink		U
		<i>Egernia napoleonis</i>	Salmon-bellied Skink		U
		<i>Glaphyromorphus gracilipes</i>	Southern Mulch Skink		U
		<i>Hemiergis peronii</i>	Three-toed Skink		U
		<i>Hemiergis quadrilineata</i>			U
		<i>Lerista distinguenda</i>			U
		<i>Lerista elegans</i>	West Coast Four-toed Lerista		U
		<i>Lerista lineata</i>			U
		<i>Menetia greyii</i>	Dwarf Skink		U
		<i>Morethia lineoocellata</i>	Western Pale-faced Morethia		U
		<i>Morethia obscura</i>			U
		<i>Tiliqua rugosa</i>	Bobtail		U
Typhlopidae					
Blind Snakes					
		<i>Ramphotyphlops australis</i>	Southern Blind Snake		U
Boidae					
Pythons, Boas					
		<i>Morelia spilota</i>	Carpet Python	S4, P4 (SW Pop)	U
Elapidae					
Elapid Snakes					
		<i>Echiopsis curta</i>	Bardick		U
		<i>Elapognathus coronatus</i>	Crowned Snake		U
		<i>Neelaps bimaculatus</i>	Black-naped Snake		U
		<i>Notechis scutatus</i>	Tiger Snake		U
		<i>Parasuta gouldii</i>	Gould's Snake		U
		<i>Parasuta nigriceps</i>	Black-backed Snake		U
		<i>Pseudonaja affinis</i>	Dugite		U
		<i>Simoselaps bertholdi</i>	Jan's Banded Snake		U
Birds					
Casuariidae					
Emus, Cassowaries					
		<i>Dromaius novaehollandiae</i>	Emu		U

*=introduced species



Class	Common	Conservation	Sighted
Family	Name	Status	April 05
Phasianidae			
Quails, Pheasants			
<i>Coturnix pectoralis</i>	Stubble Quail		
Anatidae			
Geese, Swans, Ducks			
<i>Anas gracilis</i>	Grey Teal		□
<i>Anas superciliosa</i>	Pacific Black Duck		□
<i>Chenonetta jubata</i>	Australian Wood Duck		
<i>Tadorna tadornoides</i>	Australian Shelduck		✓
Ardeidae			
Herons, Egrets, Bitterns			
<i>Egretta novaehollandiae</i>	White-faced Heron		□
<i>Nycticorax caledonicus</i>	Rufous Night Heron		□
Threskiornithidae			
Ibises, Spoonbills			
<i>Threskiornis molucca</i>	Australian White Ibis		□
<i>Threskiornis spinicollis</i>	Straw-necked Ibis		□
Accipitridae			
Kites, Goshawks, Eagles, Harriers			
<i>Accipiter cirrocephalus</i>	Collared Sparrowhawk		
<i>Accipiter fasciatus</i>	Brown Goshawk		□
<i>Aquila audax</i>	Wedge-tailed Eagle		□
<i>Aquila morphnoides</i>	Little Eagle		
<i>Elanus caeruleus</i>	Black-shouldered Kite		□
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	CA Migratory	□
<i>Haliastur sphenurus</i>	Whistling Kite		□
<i>Hamirostra isura</i>	Square-tailed Kite		□
Falconidae			
Falcons			
<i>Falco berigora</i>	Brown Falcon		
<i>Falco cenchroides</i>	Australian Kestrel		□
<i>Falco longipennis</i>	Australian Hobby		□
<i>Falco peregrinus</i>	Peregrine Falcon	S4	
Turnicidae			
Button-quails			
<i>Turnix varia</i>	Painted Button-quail		□
Columbidae			
Pigeons, Doves			
<i>Ocyphaps lophotes</i>	Crested Pigeon		□
<i>Phaps chalcoptera</i>	Common Bronzewing		✓
<i>Streptopelia senegalensis</i> *	Laughing Turtle-Dove		✓

Sig 8/1

3

*=introduced species



Class	Common	Conservation	Sighted	
Family Species	Name	Status	April 05	
Cacatuidae				
Cockatoos, Corellas				
	<i>Calyptorhynchus baudinii</i>	Baudin's Cockatoo	S1, VU	<input type="checkbox"/>
	<i>Calyptorhynchus latirostris</i>	Carnaby's Cockatoo	S1, EN	<input type="checkbox"/>
	<i>Eolophus roseicapilla</i>	Galah		<input checked="" type="checkbox"/>
Psittacidae				
Parrots				
	<i>Glossopsitta porphyrocephala</i>	Purple-crowned Lorikeet		<input type="checkbox"/>
	<i>Neophema elegans</i>	Elegant Parrot		<input type="checkbox"/>
	<i>Platyercus icterotis</i>	Western Rosella		<input type="checkbox"/>
	<i>Platyercus spurius</i>	Red-capped Parrot		<input checked="" type="checkbox"/>
	<i>Platyercus zonarius</i>	Twenty-eight Parrot		<input checked="" type="checkbox"/>
	<i>Polytelis anthoepus</i>	Regent Parrot		<input type="checkbox"/>
Cuculidae				
Parasitic Cuckoos				
	<i>Cacomantis flabelliformis</i>	Fan-tailed Cuckoo		<input type="checkbox"/>
	<i>Chrysococcyx basalis</i>	Horsfield's Bronze Cuckoo		<input type="checkbox"/>
	<i>Chrysococcyx lucidus</i>	Shining Bronze Cuckoo		<input type="checkbox"/>
	<i>Cuculus pallidus</i>	Pallid Cuckoo		<input type="checkbox"/>
Strigidae				
Hawk Owls				
	<i>Ninox novaeseelandiae</i>	Boobook Owl		<input type="checkbox"/>
Tytonidae				
Barn Owls				
	<i>Tyto alba</i>	Barn Owl		<input type="checkbox"/>
Podargidae				
Frogmouths				
	<i>Podargus strigoides</i>	Tawny Frogmouth		<input type="checkbox"/>
Aegothelidae				
Owlet-nightjars				
	<i>Aegotheles cristatus</i>	Australian Owlet-nightjar		<input type="checkbox"/>
Apodidae				
Swifts, Swiftlets				
	<i>Apus pacificus</i>	Fork-tailed Swift	CA, JA Migratory	<input type="checkbox"/>
Halcyonidae				
Kingfishers				
	<i>Dacelo novaeguineae*</i>	Laughing Kookaburra		<input checked="" type="checkbox"/>
	<i>Todiramphus sanctus</i>	Sacred Kingfisher		<input type="checkbox"/>
Meropidae				
Bee-eaters				
	<i>Merops ornatus</i>	Rainbow Bee-eater	JA Migratory	<input type="checkbox"/>

*=introduced species



Class	Family	Species	Common Name	Conservation Status	Sighted April 05
-------	--------	---------	-------------	---------------------	------------------

Maluridae

Fairy Wrens, GrassWrens

Malurus splendens Splendid Fairy-wren

SA 3

Pardalotidae

Pardalotes, Bristlebirds, Scrubwrens, Gerygones, Thornbills

Acanthiza apicalis Broad-tailed Thornbill

Acanthiza chrysorrhoa Yellow-rumped Thornbill

Acanthiza inornata Western Thornbill

Gerygone fusca Western Gerygone

Pardalotus punctatus Spotted Pardalote

Pardalotus striatus Striated Pardalote

Sericornis frontalis White-browed Scrubwren

Smicronis brevirostris Weebill

3

Meliphagidae

Honeyeaters, Chats

Acanthorhynchus superciliosus Western Spinebill

Anthochaera carunculata Red Wattlebird

Anthochaera lunulata Western Little Wattlebird

Lichenostomus virescens Singing Honeyeater

Lichmera indistincta Brown Honeyeater

Melithreptus lunatus White-naped Honeyeater

Phylidonyris nigra White-cheeked Honeyeater

Phylidonyris novaehollandiae New Holland Honeyeater

Petroicidae

Australian Robins

Eopsaltria georgiana White-breasted Robin

Petroica multicolor Scarlet Robin

Neosittidae

Sittellas

Daphoenositta chrysoptera Varied Sittella

Pachycephalidae

Crested Shrike-tit, Crested Bellbird, Shrike Thrushes, Whistlers

Colluricincla harmonica Grey Shrike-thrush

Pachycephala pectoralis Golden Whistler

Pachycephala rufiventris Rufous Whistler

3

Dicruridae

Monarchs, Magpie Lark, Flycatchers, Fantails, Drongo

Grallina cyanoleuca Magpie-lark

Myiagra inquieta Restless Flycatcher

Rhipidura fuliginosa Grey Fantail

Rhipidura leucophrys Willie Wagtail

*=introduced species



Class	Family	Species	Common Name	Conservation Status	Sighted April 05
Campephagidae					
Cuckoo-shrikes, Trillers					
		<i>Coracina novaehollandiae</i>	Black-faced Cuckoo-shrike		<input checked="" type="checkbox"/>
		<i>Lalage sueurii</i>	White-winged Triller		<input type="checkbox"/>
Artamidae					
Woodswallows, Butcherbirds, Currawongs					
		<i>Artamus cinereus</i>	Black-faced Woodswallow		<input type="checkbox"/>
		<i>Artamus cyanopterus</i>	Dusky Woodswallow		<input type="checkbox"/>
		<i>Cracticus tibicen</i>	Australian Magpie		<input checked="" type="checkbox"/>
		<i>Cracticus torquatus</i>	Grey Butcherbird		<input checked="" type="checkbox"/>
Corvidae					
Ravens, Crows					
		<i>Corvus coronoides</i>	Australian Raven		<input checked="" type="checkbox"/>
Motacillidae					
Old World Pipits, Wagtails					
		<i>Anthus novaeseelandiae</i>	Australian Pipit		<input type="checkbox"/>
Dicaeidae					
Flowerpeckers					
		<i>Dicaeum hirundinaceum</i>	Mistletoebird		<input type="checkbox"/>
Hirundinidae					
Swallows, Martins					
		<i>Hirundo neoxena</i>	Welcome Swallow		<input checked="" type="checkbox"/>
		<i>Hirundo nigricans</i>	Tree Martin		<input type="checkbox"/>
Sylviidae					
Old World Warblers					
		<i>Cincloramphus mathewsi</i>	Rufous Songlark		<input type="checkbox"/>
Zosteropidae					
White-eyes					
		<i>Zosterops lateralis</i>	Grey-breasted White-eye		<input checked="" type="checkbox"/>
Mammals					
Tachyglossidae					
Echidnas					
		<i>Tachyglossus aculeatus</i>	Echidna		<input type="checkbox"/>
Dasyuridae					
Carnivorous Marsupials					
		<i>Dasyurus geoffroii</i>	Chuditch	S1	<input type="checkbox"/>
		<i>Phascogale tapoatafa</i>	Southern Brush-tailed Phascogale	P3	<input type="checkbox"/>
		<i>Sminthopsis gilberti</i>	Gilbert's Dunnart		<input type="checkbox"/>
Peramelidae					
Bandicoots					
		<i>Isodon obesulus</i>	Southern Brown Bandicoot	P5, CD	<input type="checkbox"/>

*=introduced species



Class	Common Name	Conservation Status	Sighted April 05
Phalangeridae Brush-tail Possums, Cuscuses			
<i>Trichosurus vulpecula</i>	Common Brushtail Possum		11
Burramyidae Pygmy Possums			
<i>Cercartetus concinnus</i>	Western Pygmy-possum		0
Macropodidae Kangaroos, Wallabies			
<i>Macropus fuliginosus</i>	Western Grey Kangaroo		0
Molossidae Freetail Bats			
<i>Mormopterus planiceps</i>	Southern Freetail Bat		0
<i>Tadarida australis</i>	White-striped Freetail-bat		0
Vespertilionidae Ordinary Bats			
<i>Chalinolobus gouldii</i>	Gould's Wattled Bat		11
<i>Chalinolobus morio</i>	Chocolate Wattled Bat		0
<i>Falsistrellus mackenziei</i>	Western False Pipistrelle	P4	0
<i>Nyctophilus geoffroyi</i>	Lesser Long-eared Bat		0
<i>Nyctophilus gouldi</i>	Gould's Long-eared Bat		11
<i>Nyctophilus timoriensis</i>	Greater Long-eared Bat		0
<i>Vespadelus regulus</i>	Southern Forest Bat		0
Muridae Rats, Mice			
<i>Mus musculus*</i>	House Mouse		0
<i>Rattus fuscipes</i>	Western Bush Rat		0
<i>Rattus rattus*</i>	Black Rat		0
Canidae Dogs, Foxes			
<i>Vulpes vulpes*</i>	Red Fox		11
Felidae Cats			
<i>Felis catus*</i>	Cat		0
Leporidae Rabbits, Hares			
<i>Oryctolagus cuniculus*</i>	Rabbit		0

*=introduced species

