

# Appendix I

Terrestrial Fauna Report  
prepared by EcOz Environmental Services





# **Environmental Impact Statement for the proposed Trans Territory Pipeline**

## *Terrestrial Fauna Report*

Prepared for: Alcan Engineering Pty Ltd

Prepared by: EcOz Environmental Services



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# Environmental Impact Statement for the proposed Trans Territory Pipeline

## *Terrestrial Fauna Report*

*Document Number: 77606-700-023*

Prepared for: Alcan Engineering Pty Ltd

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### **DOCUMENT CONTROL:**

<b>Project number:</b>	WOOD0302
<b>File ref:</b>	Z:\OldServer\Documents\ecoz_projects\WOOD0302\03 Flora and Fauna\Fauna Report\Final\TTP Terrestrial Fauna Study.doc
<b>Report by:</b>	Stephanie Myles and Kylie Harvey
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<b>Date:</b>	8 <sup>th</sup> November 2004
<b>Document distribution:</b>	Ceri Morgan (1 x digital copy) Stephen Ley (1 x digital copy) Una Phelan (1 x digital copy)

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  - (g) "**Gas Transportation Project**" means the project to develop a natural gas pipeline to transport natural gas to the Gove Operations.

## EXECUTIVE SUMMARY

EcOz Environmental Services has been contracted by Alcan Engineering to undertake a study of the fauna that may be present along the proposed Trans Territory Pipeline (TTP) route. The Trans Territory Pipeline (TTP) will traverse 940 km in an east-west direction across the Top End of the Northern Territory. The pipeline will transport gas bought ashore near Wadeye from the Blacktip gas field to the Alcan Alumina Refinery on the Gove Peninsula in north-eastern Arnhem Land. Environmental assessment of the proposed TTP project requires an investigation of terrestrial fauna that occurs, or is likely to occur, in areas proposed for the development.

Within this report, species are considered as being of conservation significance if they are listed under the *Environment Protection and Biodiversity Conservation Act 1999* or the *Territory Parks and Wildlife Conservation Act 2000*. Species listed as near-threatened or those species recognised as being endemic to the Top End of the NT have also been included.

### Methodology

Fauna surveys were undertaken in six regions along the pipeline route. The survey locations were chosen based on desktop literature reviews of species distribution, and consultation with the NT Parks and Wildlife Service, NT Office of Environment and Heritage and the Department of Environment and Heritage. Areas selected for the surveys were in habitat types that typically exhibit diverse or unique fauna (or both), or in habitat types potentially utilised by species classified as 'threatened' under NT and Commonwealth legislation.

A desktop review was undertaken to assess the terrestrial vertebrate species that are known or likely to occur within 10 kms of the proposed pipeline corridor. This included a review of amphibians, reptiles, birds and mammals. Biting insects and aquatic fauna have been addressed in different reports. Information was also gathered from PWCNT and various scientific reports and publications.

### Results

The desktop review and fauna surveys identified 76 terrestrial fauna species of conservation significance that are known to occur in the bioregions traversed by the proposed pipeline corridor. Thirteen of these species are protected fauna under Northern Territory and/or Commonwealth legislation, 14 are migratory species protected under Commonwealth legislation, and 49 are species classified as near-threatened or with a restricted distribution in the Northern Territory. The presence of any of these species in the pipeline corridor is dependent on the species range and availability of preferred habitat, which is discussed in the sections below. We have taken a precautionary approach to our assessment in assuming that species of conservation significance may occur along the pipeline corridor where habitats preferred by these species exist.

### Threatened Species

The Northern Quoll *Dasyurus hallucatus* has been nominated for listing as vulnerable under the EPBC Act and was located at three of the Moyle River survey sites (KP75-77). Other threatened mammal species that may exist along the pipeline route include the Brush-tailed Tree-rat *Conilurus penicillatus*, Northern Brush-tailed Phascogale *Phascogale tapoatafa pirata*, and the Bare-rumped Sheath-tail Bat *Saccolaimus saccolaimus nudicluniatus*. Although these species were not identified through the desktop review or field surveys, the presence of these species can not be discounted as suitable habitats occur along the pipeline route. The False Water Rat *Xeromys myoides* and Northern Hopping Mouse *Notomys aquilo* are both listed as vulnerable under the EPBC Act but are unlikely to occur along the pipeline route as preferred habitat is not present.

The endangered Gouldian Finch *Erythrura gouldiae* was located at the Chambers River survey area (KP443 to KP445) at sites 4B1 and 4C1 and was also identified to exist in the Gulf Falls and Uplands bioregion in the fauna atlas records. The vulnerable listed Red Goshawk *Erythrotriorchis radiatus* was not sighted during the fauna surveys, however its large distribution spans much of Northern Australia including the proposed pipeline route. The Northern Shrike-tit *Falcunculus (frontatus) whitei* is listed as vulnerable under the EPBC Act and suitable habitat for this species spans the full extent of the pipeline corridor. There is very little information available on this species, however it is believed that

removal of eucalyptus woodlands within the corridor would have a short-term impact on this species as there is a wide spread availability of suitable habitat.

The Wood Frog *Rana daemeli* is listed as vulnerable under the TPWC Act. This species is known to occur where the pipeline is proposed to cross the Latram River, Giddy River and Cato River. Directional drilling techniques are recommended at these crossings to minimise the impact on riparian rainforest habitat that appears to be favoured by this species.

**Migratory Species**

Three migratory species protected under the Commonwealth *EPBC Act 1999* were recorded along the pipeline route during the field surveys including the Gouldian Finch *Erythrura gouldiae*, White-bellied Sea-eagle *Haliaeetus leucogaster* and the Rufous Fantail *Rhipidura rufifrons*. A further 11 migratory species are likely to occur in the pipeline corridor.

**Near-threatened and restricted species**

The known range of 26 near-threatened terrestrial fauna species extends to the proposed pipeline corridor. Fourteen of these were identified as being present either through the fauna surveys or desktop review of data from the NT fauna atlas. The distributions of 24 species that are known to be endemic to the Top End region of the NT were identified as extending to the pipeline corridor. Fifteen of these species were identified either through the fauna surveys or the desktop review as being present along the pipeline route.

**Significant Fauna Habitats**

Field surveys undertaken to verify the environmental suitability of the proposed pipeline route resulted in most habitats of notable conservation significance to fauna being avoided. Where this was not possible, for example at riparian corridors, construction techniques that will minimise impacts have been prescribed for inclusion in the EIS and EMPs being prepared for the project. The pipeline corridor and activities associated with construction will occur in proximity to significant fauna habitats including monsoon rainforest patches, riparian corridors and isolated permanent and semi-permanent wetlands. These habitat types are restricted in distribution and are of conservation significance as they typically exhibit high diversity, provide essential habitat for fauna with specific habitat requirements and act as a refuge habitat during the dry season. There are also habitats in or near to the proposed pipeline corridor that are known to support the ‘threatened’ Gouldian Finch *Erythrura gouldiae* and Wood Frog *Rana daemeli*.

**Potential Environmental Effects and Management Recommendations**

A number of potential environmental effects associated with the construction and operation of the pipeline have been identified and safeguards outlined in order to minimise impacts. Key issues include the short-term loss of species due to disturbance during construction, removal and fragmentation of fauna habitats, fauna capture in the open trench and the introduction and spread of weeds and feral species. Particular attention was also directed towards potential safeguards to minimise the impacts on species of conservation significance.

The following table provides a summary of the management practices that have been recommended in order to minimise the potential impacts of the construction and operation of the pipeline for the various potential effects that were identified.

**Summary of potential effects and recommendations to minimise impact.**

Potential Effect	Recommendations
Short-term loss of species	<ul style="list-style-type: none"> <li>▪ Develop a noise reduction strategy for the construction and operational phases of the project. Ensure blasting activities are kept to the absolute minimum amount required.</li> <li>▪ Implement dust minimisation strategies.</li> <li>▪ Restrict vehicle travel on access routes during both the construction and operation phases of the project to daylight hours, avoiding dusk and dawn in particular and between sunset and sunrise where possible to minimise fauna casualties.</li> </ul>

Potential Effect	Recommendations
	<ul style="list-style-type: none"> <li>▪ Ensure that all equipment and vehicles being used during construction and operation are maintained via regular routine maintenance schedules to ensure that they are operating at an optimal level and not creating unnecessary noise and air pollution.</li> </ul>
Removal and fragmentation of fauna habitats	<ul style="list-style-type: none"> <li>▪ Keep the extent of the working footprint for all project components, including access tracks, borrow pits, construction camps and above-ground infrastructure to the minimum area necessary for construction and operation activities.</li> <li>▪ Use directional drill crossings at sensitive watercourses as recommended by an environmental scientist.</li> <li>▪ Crossing selection at ephemeral watercourses should avoid ponds of permanent or semi-permanent water that provide fauna refuges in the dry season.</li> <li>▪ Minimise the working width at all watercourse crossings and construct vehicle crossings to minimise bank disturbance during construction.</li> <li>▪ Avoid clearing of large mature trees, especially fruiting trees (such as <i>Ficus virens</i>, <i>Terminalia microcarpa</i>, <i>Syzygium nervosum</i> and <i>Canarium australianum</i>), which provide important habitat and act as a stepping stone between fragmented habitats (PWCNT 2001).</li> <li>▪ Construct watercourse crossings as early as possible in the dry season and fast track construction activities and rehabilitation and revegetation to minimise the amount of time that the habitat is disturbed.</li> <li>▪ Clearly mark the work area using construction pegs, construction flagging, or other temporary measures, and identify areas requiring special protection as 'no-go' areas on construction plans and on the ground.</li> <li>▪ Incorporate penalties for breach of environmental protection conditions into construction contracts.</li> <li>▪ Rehabilitate and revegetate the ROW, construction camps, borrow pits and all areas cleared during construction that do not need to remain cleared for operational purposes.</li> <li>▪ Consult with Traditional Owners and other Aboriginal representative groups, to develop appropriate mitigation strategies.</li> <li>▪ Stage clearing of vegetation in accordance with the construction schedule to minimise the time between clearing and rehabilitation.</li> <li>▪ Design additional project infrastructure, including access routes, vehicle and plant storage and turn-around areas, borrow pits, compressor stations and scraper facilities so that: <ul style="list-style-type: none"> <li>▪ previously disturbed areas are used where possible;</li> <li>▪ areas of sensitive vegetation are avoided; and</li> <li>▪ low impact construction techniques are used in environmentally sensitive areas.</li> </ul> </li> <li>▪ Locations of areas of disturbance that have not yet been assessed by an environmental scientist should be assessed prior to construction.</li> <li>▪ Develop a rehabilitation plan prior to construction. Include a rehabilitation schedule, proposed techniques, species proposed for use, and the following general principles: <ul style="list-style-type: none"> <li>▪ Stockpile top soil and suitable vegetative matter near to the area from which it was taken so that it can be respread over the area during rehabilitation.</li> <li>▪ Locate stockpiles within the marked working width.</li> <li>▪ Store excavated soil on-site in an area previously cleared of vegetation, or remove to an appropriate area off-site. Any on-site or off-site location needs to be approved by DIPE prior to dumping.</li> <li>▪ Clearly mark appropriate locations for dumping of spoil.</li> </ul> </li> <li>▪ Brief all construction staff on the importance of protecting fauna species and habitats. This briefing must include the requirements for clearing and detail the construction worker's responsibility when conducting clearing activities and when carrying out rehabilitation.</li> </ul>
Fauna capture in open trench	<ul style="list-style-type: none"> <li>▪ Undertake operations in the most benign season (i.e. in the second and third quarters).</li> <li>▪ Interrupt trench with frequent "escape ramps" for captured wildlife.</li> <li>▪ Minimise the time the trench is opened, through careful planning of</li> </ul>

Potential Effect	Recommendations
	<p>construction and pipe laying.</p> <ul style="list-style-type: none"> <li>▪ Site pipeline route to avoid areas of exceptional conservation values (eg. remnant bushland, essential habitat for threatened species, etc.).</li> <li>▪ Ensure that trenches are inspected frequently (by a wildlife handler).</li> </ul>
Introduction and spread of weeds and exotic fauna species	<ul style="list-style-type: none"> <li>▪ Consult with the Department of Infrastructure, Planning and Environment - Weeds Branch to develop an exotic species management programme for construction and operation, incorporating the elements identified below.</li> <li>▪ Identify the locations of all existing weed infestations along the pipeline corridor and establish quarantine, washdown and inspection procedures to ensure that weeds are not spread out of these areas.</li> <li>▪ Identify and treat existing weed infestations in the pipeline corridor, along access routes, at construction camp sites and at borrow pits prior to construction activities.</li> <li>▪ Identify all known infestations of the Crazy Ant in proximity to the pipeline corridor and implement specific quarantine, washdown, inspection and monitoring to ensure that this species is not spread.</li> <li>▪ Inspect all vehicles, plant and equipment for Cane Toads prior to travelling west of the Daly River.</li> <li>▪ Educate all project personnel about exotic species present in the areas in which they will be working and establish a strategy for personnel to report weed infestations and exotic animal sightings.</li> <li>▪ Only use species native to the area in rehabilitation and landscaping, and determine species suitability for use in consultation with experts in rehabilitation techniques in tropical environments.</li> <li>▪ Prohibit taking of domestic animals into the pipeline corridor.</li> </ul>

**Summary of recommendations for minimising impacts on species of conservation significance.**

Species	Route section	Management recommendations
Gouldian Finch <i>Erythrura gouldiae</i>	KP 427 – 460	<ul style="list-style-type: none"> <li>▪ Maintain at least a 500 m distance between any disturbance and the Gouldian Finch habitats between KP 443 and KP 445 near the Chambers River</li> <li>▪ Maintain route design to traverse lowlands avoiding rocky hills</li> </ul>
Red Goshawk <i>Erythrotriorchis radiatus</i>	All	<ul style="list-style-type: none"> <li>▪ Measures to detect nest sites and avoid disturbance</li> </ul>
Northern shrike-tit <i>Falcunculus (frontatus) whitei</i>	All	<ul style="list-style-type: none"> <li>▪ Implement an exotic species management plan</li> <li>▪ Implement a fire management plan</li> </ul>
Northern Quoll <i>Dasyurus hallucatus</i>	All	<ul style="list-style-type: none"> <li>▪ Implement an exotic species management plan</li> <li>▪ Implement a fire management plan</li> </ul>
Northern Brush-Tailed <i>Phascogale Phascogale tapoatafa pirata</i>	All	<ul style="list-style-type: none"> <li>▪ Implement an exotic species management plan</li> <li>▪ Implement a fire management plan</li> </ul>
Brush-tailed Tree-rat <i>Conilurus penicillatus</i>	All	<ul style="list-style-type: none"> <li>▪ Implement an exotic species management plan</li> <li>▪ Implement a fire management plan</li> </ul>
Wood Frog <i>Rana daemeli</i>	KP 922 KP 880 KP 913	<ul style="list-style-type: none"> <li>▪ Bore under the Latram River, Giddy River and Cato River</li> <li>▪ Implement an exotic species management plan</li> <li>▪ Implement a fire management plan</li> </ul>
Gove Crow Butterfly <i>Euploea alcatheae enastri</i>	KP 880 – 943	<ul style="list-style-type: none"> <li>▪ Implement an exotic species management plan</li> </ul>
Migratory Species	All	<ul style="list-style-type: none"> <li>▪ Maintain at least 200m distance between open swamps and any disturbance</li> <li>▪ Minimise construction time at waterways crossings</li> </ul>

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Appendix 1 Survey site photos.

Appendix 2 List of vertebrate fauna species recorded in the pipeline corridor and surrounding region.

Appendix 3 Results of fauna surveys.

## **ACKNOWLEDGEMENTS**

We would like to thank Alex Dudley, Ron Firth and Chris Brady for undertaking the fauna surveys and the NT Museum and NT Herbarium for their assistance in identification of voucher specimens. The Department of Infrastructure, Planning and Environment is acknowledged for the provision of data to the project. Specifically, Peter Krause is acknowledged for collating the NT Fauna Atlas data for us.

Thanks are also due to John Woinarski and Alaric Fisher from the Territory Parks and Wildlife Commission for reviewing the methodology and their advice on many occasions. Thanks also to Ray Chatto for sharing his knowledge of shorebirds, sea birds and water birds of the NT.

The field survey teams would like to extend their thanks to those who provided assistance during the field surveys including the NLC, Traditional Owners and those who provided logistic support. Field assistants included Simon Brown, Austin Friday, Daniel Jones, Jasper Burns (& others from Alex & Ron’s teams).

# 1. INTRODUCTION

The Trans Territory Pipeline (TTP) will traverse 940 km in an east-west direction across the Top End of the Northern Territory. The pipeline will transport gas bought ashore near Wadeye from the Blacktip gas field to the Alcan Alumina Refinery on the Gove Peninsula in north-eastern Arnhem Land. Environmental assessment of the proposed TTP project requires an investigation of terrestrial fauna that occurs, or is likely to occur, in areas proposed for the development. EcOz Environmental Services has been contracted by Alcan Engineering to undertake these studies. A detailed overview of the proposed development is provided in the referral documents submitted to the NT and Commonwealth Governments and in preliminary design documentation. These documents form the current design specifications on which the assessment of terrestrial fauna was based.

The “Guidelines for Preparation of a Draft Environmental Impact Statement on the Proposed Trans Territory Pipeline (Department of Infrastructure, Planning and Environment, March 2004)” detail the specific requirements of the draft EIS document that is to be prepared for the Project in accordance with Clause 8 of the Environmental Assessment Administrative Procedures of the *Environmental Assessment Act (1982)* and Chapter 4 Division 6 of the *Environment Protection and Biodiversity Conservation Act (1999)*. The terrestrial fauna study was designed to satisfy the requirements of the EIS Guidelines, and specifically to provide baseline information on which to base an assessment of the potential impacts of the project, and the development of appropriate mitigation measures.

The aims of the fauna study were to:

- undertake a desktop study to identify vertebrate fauna species and habitats that occur, or are likely to occur, in areas that may be affected by the project;
- undertake a survey of key fauna habitats and areas likely to contain habitat for fauna species of conservation significance;
- assess the conservation significance of fauna species and habitats that may be affected by the project in a local, regional and national context with specific reference to species listed under the provisions of the *Territory Parks and Wildlife Conservation Act 2000* and the *EPBC Act 1999*; and
- recommend management measures and safeguards to minimise the impacts of the project on terrestrial vertebrate fauna.

This report is concerned with documenting baseline information on the terrestrial fauna species and habitats that occur along the proposed TTP route, and assessing the potential impacts of clearing of a 30 m ‘Right of Way’ (ROW), and pipeline construction and operation. The report documents the findings of field surveys, consultations and reviews of existing information.

## 2. METHODOLOGY

### 2.1. Desktop literature review

No systematic surveys of terrestrial fauna had been undertaken in the pipeline corridor prior to the surveys conducted specifically for the proposed project. In the absence of previous surveys a desktop study of relevant literature and databases, and consultations with regional fauna experts from the NT Parks and Wildlife Service, were undertaken to identify:

- the range of fauna species and habitats that are likely to occur in the areas proposed for development;
- fauna species and habitats of conservation significance that are likely to occur in areas proposed for development; and
- any other environmental constraints.

The main data sources utilised in the desktop review are listed below:

- NT Fauna Atlas records provided by the NT Parks and Wildlife Service for the region within a 10 km radius of the proposed pipeline centreline.
- EPBC Act Protected Matters Search Tool for the region within a 10km radius of the proposed pipeline centreline.
- Bioregional summaries for the Darwin Coastal, Daly Basin, Victoria Bonaparte, Central Arnhem, Gulf Falls and Uplands and Arnhem Coast bioregions (Woinarski 2002a-f).
- Recent data from surveys on seabirds (Chatto 2001), shorebirds (Chatto 2003) and waterbirds (Chatto 2000) across the Northern Territory.
- Key scientific papers and reference books.

The results of the desktop review were used to identify fauna species and habitats of conservation significance that occur in or near the proposed pipeline corridor and to focus the field assessments on areas of potential significance to fauna.

### 2.2. Field surveys

Field surveys of fauna were undertaken at six locations of potential ecological significance to fauna from the 8<sup>th</sup> of May to the 14<sup>th</sup> of July 2004. The survey locations were chosen based on desktop literature reviews of species distribution, and consultation with the NT Parks and Wildlife Service, NT Office of Environment and Heritage and the Department of Environment and Heritage. Areas selected for the surveys were in habitat types that typically exhibit diverse or unique fauna (or both), or in habitat types potentially utilised by species classified as 'threatened' under NT and Commonwealth legislation. The areas and habitats that were the focus of the field surveys are listed in **Table 1**.

At each area of interest a one day reconnaissance survey was undertaken to identify the most suitable survey sites representative of each habitat type. Site selection took into account local environmental factors such as representativeness, presence of microhabitats and site accessibility. Six survey sites were established and surveyed at each of the six locations of interest. **Table 1** summarises the survey sites. Photos of each of site are provided at **Appendix 1**.

**Table 1 Fauna survey sites.**

Survey Area	Habitat/species of interest	Vegetation structure of survey site	Near KP	Site no.	Latitude	Longitude
Moyle River (Palumpa to Moyle River including Moyle floodplain and western edge of Wingate Mountains)	Riparian Rainforest Sandstone	Open Forest Open Forest Open Woodland Open Woodland Open Woodland Scattered Isolated Trees	75-77	6A1 6A2 6B1 6B2 6C1 6C2	-14.26847 -14.27053 -14.26938 -14.26146 -14.26812 -14.26480	130.07248 130.07232 130.07256 130.06763 130.07264 130.07036
Bradshaw/Dorisvale Station (Eastern edge of Wingate Mountains/Dorisvale Station)	Riparian Rainforest Sandstone	Open Woodland Open Woodland Open Woodland Open Woodland Woodland Open Woodland	216-219	7A1 7A2 7B1 7B2 7C1 7C2	-14.48619 -14.48771 -14.48487 -14.48585 -14.48319 -14.48214	131.22842 131.22958 131.23268 131.24092 131.24186 131.23683
Chainman Creek and Chinaman Creek (Woodlands south of Katherine on limestone geological type)	Rocky hills Riparian Gouldian Finch	Open Woodland Open Woodland Open Woodland Tall Open Woodland Open Woodland Open Woodland	319 and 322	3A1 3A2 3B1 3B2 3C1 3C2	-14.58213 -14.58365 -14.57227 -14.57355 -14.59887 -14.59726	132.16114 132.16285 132.17757 132.17568 132.14668 132.14802
Chambers River (Sandstone hills east of Beswick)	Riparian Sandstone	Open Forest Woodland Open Forest Woodland Woodland Woodland	444	4A1 4A2 4B1 4B2 4C1 4C2	-14.53706 -14.53895 -14.53846 -14.53837 -14.53593 -14.53429	133.26928 133.27121 133.27288 133.27649 133.27485 133.27521
Goromuru and Richard Rivers (Forest south of Arnhem Bay and north of Central Arnhem Highway)	Riparian Rainforest Tall Eucalyptus Forest Wood Frog Brush-tailed Tree Rat	Open Forest Open Forest Open Forest Scattered Isolated Trees Open Forest Open Forest	840	2A1 2A2 2B1 2B2 2C1 2C2	-12.68608 -12.68612 -12.68733 -12.68601 -12.68748 -12.68515	136.19212 136.18971 136.18758 136.18407 136.18534 136.18271
Latram, and Giddy Rivers (Woodland and forest on Gove Peninsula neck)	Riparian Rainforest Tall Eucalyptus Forest Brush-tailed Phascogale Brush-tailed Tree Rat Wood Frog	Woodland Woodland Woodland Open Forest Closed Forest Open Forest	922	1A1 1A2 1B1 1B2 1C1 1C2	-12.30373 -12.30273 -12.30171 -12.30853 -12.30536 -12.30789	136.77456 136.77252 136.79119 136.77483 136.77326 136.78343

In addition to the targeted fauna surveys, assessment of vegetation and habitats were undertaken along the length of the pipeline corridor, and at locations proposed for construction camps and compressor stations. Significant fauna habitats were identified during these surveys.

At each fauna survey site the following information was recorded:

- GPS coordinates;
- site photo;
- landscape position;
- soils and geology;
- presence\absence of water;

- evidence of fire, weeds and feral animals; and
- vegetation community structure and dominant species in each stratum.

The fauna surveys followed the widely accepted Bioregional Assessment methods developed by the NT Parks and Wildlife Service. At each survey site a 50 m x 50 m quadrat was established with 20 Elliot (box) traps, 4 cage traps and 4 pit traps. Each Elliot and cage trap was baited with a mixture of peanut butter and oats. All traps were opened for 3 consecutive nights and checked early each morning. The pitfall traps were left open for the entire trapping period with each trap being checked at least twice during the day to avoid animal deaths.

At each survey site, three diurnal and two nocturnal active searches, involving raking leaf litter, spotlighting and checking under bark and logs, were conducted. Eight diurnal instantaneous bird counts were also conducted in each quadrat. Opportunistic observations made whilst travelling around the project area between the survey sites were also recorded.

The surveys were conducted by a team of two experienced fauna surveyors. Field assistants were required for each team to assist with site preparation, including installing the traps, checking the traps, collecting animals, setting up and running the camps, and loading and unloading equipment. Aboriginal people, from nearby communities, were used as field assistants where possible.

Parks and Wildlife Service License number 17901 applied to the survey. Appropriate Animal Ethics Clearance was obtained from the Charles Darwin University Animal Ethics Committee.

Animals that were unable to be identified in the field were taken as voucher specimens and lodged with the NT Museum for identification.

The following resources were used for species identification and classification:

- Amphibians – A Field Guide to Australian Frogs (Barker *et al.* 1995)
- Reptiles – A Complete Guide to Reptiles of Australia (Wilson and Swan 2003)
- Birds – The New Atlas of Australian Birds (Barrett *et al.* 2003)
- Mammals – The Mammals of Australia (Strahan 1995)

### 2.3. Evaluation of Conservation Significance

The conservation significance of fauna and habitats was assessed with reference to the following:

- Threatened species listed under the *Territory Parks and Wildlife Conservation Act 2000* and/or *Environment Protection and Biodiversity Conservation Act 1999*.  
‘Threatened’ species are those classified as extinct in the wild, critically endangered, endangered or vulnerable as assessed against International Union for the Conservation of Nature (IUCN) categories. The Territory Parks and Wildlife Conservation Act 2000 gives protected status to all species classified as ‘threatened’ in the NT and requires a person to apply for a permit to take or interfere with protected species. Nationally ‘threatened’ species constitute a Matter of National Environmental Significance under the Environment Protection and Biodiversity Conservation Act 1999. In accordance with this Act, a person cannot take an action that will have a significant impact on a ‘threatened’ species without prior approval of the Commonwealth.
- Migratory species listed under the Environment Protection and Biodiversity Conservation Act 1999.
- Migratory species under the EPBC Act include species listed in:
  - the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals) for which Australia is a Range State under the Convention;
  - the Agreement between the Government of Australia and the Government of the Peoples Republic of China for the Protection of Migratory Birds and their Environment (CAMBA); and
  - the Agreement between the Government of Japan and the Government of Australia for the Protection of Migratory Birds and Birds in Danger of Extinction and their Environment (JAMBA).

Australia has an international obligation to protect species listed under these agreements. Migratory species constitute a Matter of National Environmental Significance under the *EPBC Act*.

- Species that are classified as Near-Threatened and/or have a regionally restricted distribution in the Northern Territory.

A taxon is Near Threatened when it has been evaluated against the IUCN criteria and although it does not qualify for classification as Critically Endangered, Endangered or Vulnerable now, it is likely to qualify for a threatened category in the future. Near Threatened species are not specially protected under legislation, however, the potential for these species to become rarer in the future has been identified and establishes a need to implement conservation measures to protect them.

Regionally restricted species for the purpose of this report are those that are endemic to the Top End of the Northern Territory. A desktop review of species ranges was undertaken to identify endemic species. The known range and habitat requirements of species were identified with reference to Churchill (1998) for bats; Cole and Woinarski (2002), Woinarski (2000) and Strahan (1995) for mammals, Barrett *et al.* (2003), Garnett and Crowley (2000) and Readers Digest (1997) for birds and Cogger (2000) and Wilson and Swan (2003) for reptiles.

- Habitats of listed ‘threatened’ species or with outstanding biodiversity values.

Habitats of listed ‘threatened’ species or with outstanding biodiversity values are generally those identified from published literature and field surveys. An assessment of habitat values in the project area has been made in light of these identified biodiversity values.

### 3. RESULTS

#### 3.1. Fauna Habitats

The proposed pipeline corridor traverses a variety of different fauna habitats. The dominant habitat type along the proposed corridor is *Eucalyptus tetrodonta* and *E. miniata* woodland to open forest with an understorey of tussock grasses. Habitats dominated by other species of *Eucalyptus*/*Corymbia* occur on soils with higher clay content and in rocky areas. The *Eucalyptus*/*Corymbia* woodland to forest habitats are dissected by numerous minor ephemeral drainage lines, and riparian corridors associated with major rivers and creeks. *Melaleuca* dominated woodlands and open grasslands occur in seasonally inundated areas. Isolated permanent swamps and rainforest patches are scattered through the country traversed by the proposed corridor but have generally been avoided through the on-ground route selection and verification surveys.

The country traversed between kilometre point (KP) 146 and KP 380, and KP 465 and KP 482, is predominantly pastoral and agricultural land-use. Weed infestations are common throughout this area (refer to TTP Flora Report) and the impacts of feral animals are evident at most of the riparian and seasonally inundated *Melaleuca* forests and grasslands. It is likely that the value of habitats in these regions to fauna has been degraded to an extent by these factors. However, regionally important habitats do occur, especially riparian corridors and wetlands. Outside of these KP's most of the country traversed by the proposed corridor is largely unaffected by humans. Feral animals do still occur in these areas, especially pigs, buffalo, donkeys and horses, and Cane Toads within their range, however, weeds are uncommon. A large proportion of the habitat along the route has been affected by fire and it appears that most of the country traversed by the pipeline route is burnt annually.

The main fauna habitats of conservation significance identified in and near the areas proposed for development include:

- Coastal tall eucalyptus forests;
- Wetlands and riparian vegetation;
- Rainforest and monsoon vine forest; and
- Sandstone habitat.

These habitat types were the focus of the fauna surveys, the results of which are discussed below.

#### 3.2. Fauna Species

A total of 187 fauna species were recorded during the field surveys. The number of species of amphibians, reptiles, birds and mammals recorded at each survey location are summarised in **Table 2** and each group of species is discussed in the sections below.

**Table 2 Number of native fauna species recorded at each survey location**

	Moyle River	Dorisvale Station	Chambers River	Chainman River	Goromuru River	Latram River
<b>Amphibians</b>	9	13	13	8	10	8
<b>Reptiles</b>	21	23	22	18	20	13
<b>Birds</b>	44	69	60	50	66	36
<b>Mammals</b>	7	11	7	3	8	4

An additional 173 species of native vertebrate fauna were recorded in the NT Fauna Atlas records. The NT Fauna Atlas covers a wider area and greater range of habitat types than was covered by the field surveys and therefore the high number of species recorded in the Atlas but not in the field surveys was expected. The species identified only from the NT Fauna Atlas records may or may not occur in the project area depending on habitat availability, which is discussed to some extent in the following sections.

A further 10 species of vertebrate fauna that may occur in the pipeline corridor were identified through a search of the EPBC Protected Matters Search Tool (Department of Environment and Heritage 2004 July 29).

In total, 360 species of vertebrate fauna were identified from the desktop sources and the fauna surveys. A full list of fauna species is provided at Appendix 2.

### 3.2.1. Amphibians

Sixteen native amphibian species were recorded during the field surveys. An additional six species were recorded in the NT Fauna Atlas. Species richness was greatest at the open forest and woodland sites 4A1 and 4A2 at Chamber's River, where 12 and 11 species were recorded respectively. Only one native frog species was recorded in the Bradshaw Creek area of interest. Generally, trapping numbers were low at all sites and some species that could be expected to occur at the survey sites were absent. This could be largely attributed to the cool weather and dry conditions that prevailed at the time the field surveys were conducted, especially in regards to some burrowing and aestivating frog species which are not active at lower temperatures (e.g. *Cyclorana* species).

Although there were no species found outside of their known ranges, Copland's Rock Frog *Litoria coplandi* and *Crinia remota* were identified at Chambers River and Dorisvale Station where they had not previously been recorded. Additionally, *C. remota* and a *Crinia sp.* were located at the Moyle River and Goromuru River sites respectively where they had previously not been recorded.

The Cane Toad *Bufo marinus*, an introduced species, was recorded at the Chambers River, Chainman River, Dorisvale Station, Latram River and Goromuru River survey sites.

### 3.2.2. Reptiles

Forty-five species of reptile were recorded during the surveys, including six snakes, eight geckoes (seven native, one introduced), 21 skinks, five dragons and five goannas. The Moyle River and Chambers River locations produced the highest number of reptile species with 23 species recorded at each. Species richness was lowest at the Dorisvale Station location where 11 species were recorded and no site had over 5 reptile species. Provided suitable habitat is available, the majority of the additional 39 species listed in the NT Fauna Atlas are likely to occur within their ranges in the vicinity of the pipeline route.

Bynoe's Gecko *Heterotonia binoei* and the Arboreal Snake-eyed Skink *Cryptoblepharus plagiocephalus* are common species that were present at all survey locations. Although no species were found outside of their current known ranges, 11 species of reptile were identified at various locations along the route where they previously had not been recorded.

### 3.2.3. Birds

One-hundred and seven bird species were identified during the surveys along the pipeline route. The endangered Gouldian Finch *Erythrura gouldiae* was identified at two of the Chamber's River survey sites (see section 4.1 below). Other bird species that are listed as threatened, including the Red Goshawk *Erythrotriorchis radiatus* and the Northern Crested Shrike-tit *Falcunculus frontatus whitei* may be found along the pipeline corridor which falls within their known, wide ranging distribution. The near-threatened Yellow-rumped Mannikin *Lonchura flaviprymna* was observed at Gorommru River.

Bird species richness was highest at the Chambers River location where 52 species were recorded between the six survey sites. Sites 4B1 and 4C1 had the highest individual species richness of all of the sites surveyed with 29 species recorded at each. Diversity was lowest at the Latram and Giddy River locations where only 36 bird species were recorded. Site 1B1 recorded the lowest individual site diversity with six species recorded. The Atlas holds records of an additional 94 bird species that were not recorded during the field surveys.

The White-bellied Cuckoo Shrike *Coracina papuensis*, Peaceful Dove *Geopelia striata*, Mistletoe Bird *Dicaeum hirundinaceum*, Red-backed Fairy Wren *Malurus melanocephalus*, White-throated Honeyeater *Melitreptus albogularis*, Weebill *Smicrornis brevirostris*, Red-winged Parrot *Aprosmictus erythropterus* and the Rainbow Lorikeet *Trichoglossus haematodus* are common species that were observed at all survey locations. Although no species were found outside of their current distributions, 6 bird species were recorded at various locations along the route, where previously records were absent.

#### 3.2.4. Mammals

Eighteen species of mammal, including three introduced species, were recorded during the field surveys. The Moyle River and Goromuru River locations recorded the highest species diversity with 7 mammal species recorded between the six sites at each location. The lowest species richness was recorded at the Chainman and Chinaman Creek location where only 3 species of mammal were recorded. At 3 of the sites in this area no mammal species were recorded. All of the species recorded are common to the areas where they were observed.

The NT Fauna Atlas records, which cover a wider range of habitats than were sampled in the field surveys, indicate that a number of other mammal species are likely to occur in areas traversed by the proposed TTP route. The Atlas holds records of an additional 34 mammal species that were not recorded during the field surveys. This includes 8 species of bat which were not targeted in the field surveys. The relatively low numbers of mammals recorded during the field surveys is not unexpected as the surveys were of short duration.

Although not outside of the estimated current range, the Dunnart *Sminthopsis bindi* was located at the Chamber's River and Dorisvale Station survey sites where records did not previously exist.

#### 3.2.5. Introduced species

Four introduced vertebrate species, including the Cane Toad *Bufo marinus*, Donkey *Equus asinus*, Water Buffalo *Bubalus bubalis*, and the House Mouse *Mus musculus*, were recorded during field surveys. Cane Toads were found at the Chambers River, Chainman Creek, Dorisvale Station, Latram River and Goromuru River survey sites in cage, pit and Elliot traps. Donkeys were observed at the Chainman and Dorisvale survey sites. Pigs were not observed at any of the survey sites, however, they were observed at numerous locations during the route selection and verification surveys. Pigs and feral cats were present in the fauna atlas data along the pipeline route in the Central Arnhem bioregion. The presence of buffalo was evident at a number of the Latram River and Goromuru River survey sites. Large numbers of donkeys and horses were observed along the pipeline corridor in the east.

Cane Toads *Bufo marinus* are present across all but the western one-third of the pipeline corridor. The Cane Toad is an introduced species that now occupies much of Queensland, northern New South Wales and the Top End of the Northern Territory. Concern regarding the ecological impacts of Cane Toads is widespread. Predation, competition and lethal toxic ingestion caused by Cane Toads is currently nominated for listing as a 'key threatening process' under the Federal EPBC Act. Their current range extends from Nhulunbuy in the east to west of Katherine, and sightings have been reported in the Lower Daly River region (Frogwatch NT 2004 May 14). It is expected that they will move across the entire Top End in the next few years. Movement of construction materials, vehicles and plant from infested areas to non-infested areas along the route has the potential to accelerate the spread of Cane Toads, as does the creation of a cleared corridor for the pipeline.

The Yellow Crazy Ant *Anoplolepis gracilipes* is an invasive species that was first reported in the Gove Peninsula in 1982. The species now occurs at numerous sites across north-east Arnhem Land, including at 25 sites along the proposed pipeline corridor (Appendix 4) (Ben Hoffmann pers. comm. 2004). The Global Invasive Species Program recognises *A. gracilipes* as one of the world's 100 worst invaders and the species poses a major environmental and a secondary agricultural pest in Australia (O'Dowd 2004). It is known to affect ecosystem processes such as litter decomposition and can impact community structure and composition. Transport by people across county is the main method of spread of *A. gracilipes* and the TTP project has the potential to aid in the spread of this species. The sites in the pipeline corridor where Crazy Ant colonies already exist are earmarked for treatment by the Crazy Ant Management Group in 2005 (Ben Hoffmann pers. comm. 2004).

## 4. CONSERVATION SIGNIFICANCE

The desktop review and fauna surveys identified 76 terrestrial fauna species of conservation significance that are known to occur in the bioregions traversed by the proposed pipeline corridor. Thirteen of these species are protected fauna under Northern Territory and/or Commonwealth legislation, 14 are migratory species protected under Commonwealth legislation, and 49 are species classified as near-threatened or with a restricted distribution in the Northern Territory. The presence of any of these species in the pipeline corridor is dependent on the species range and availability of preferred habitat, which is discussed in the sections below. We have taken a precautionary approach to our assessment in assuming that species of conservation significance may occur along the pipeline corridor where habitats preferred by these species exist. The discussion of the potential impacts of the proposed project on species of conservation significance that is provided in **Section 5.3** is based on this assumption.

### 4.1. Threatened species

Thirteen ‘threatened’ species protected under Northern Territory and/or Commonwealth legislation occur in the bioregions traversed by the proposed pipeline corridor. **Table 3** lists each of the species together with their preferred habitat and an indication as to whether this habitat occurs in the pipeline corridor.

### 4.2. Migratory species

Three migratory species protected under the Commonwealth EPBC Act 1999 were recorded along the pipeline route during the field surveys. These are the Gouldian Finch *Erythrura gouldiae*, White-bellied Sea-eagle *Haliaeetus leucogaster* and the Rufous Fantail *Rhipidura rufifrons*. A further 11 migratory species are likely to occur in the pipeline corridor (Department of Environment and Heritage 2004 July 29). These species include the Freshwater Crocodile *Crocodylus johnstoni* the Saltwater Crocodile *C. porosus*, 5 wetland bird species and 4 terrestrial bird species. A full list of the migratory species that have been recorded or are likely to occur along the proposed pipeline corridor is provided at Appendix 2. Freshwater Crocodiles and Saltwater Crocodiles are known to be present in most of the wetlands, creeks and rivers traversed by the proposed pipeline corridor.

A number of ‘migratory’ marine turtles and mammals may inhabit the marine environments around the Gove Peninsula where the proposed pipeline will terminate. These species have not been considered in this report as there will be no direct impacts on the marine environment.

**Table 3 ‘Threatened’ species recorded or potentially occurring in pipeline corridor. Source: Species lists are taken from Woinarski (2002) but have been updated to reflect recent changes to the conservation status of some species.**

Species name	Bioregions along route	NT listing	EPBC listing	Preferred Habitat and Known Distribution	Likelihood of occurrence\potential impacts	Known records in corridor
<b>Mammals</b>						
Brush-tailed Tree-rat <i>Conilurus penicillatus</i>	Darwin Coastal Arnhem Coastal	VUL	-	Tall eucalypt forests with a shrubby understorey, however, in some locations within its range it also occurs on coastal grasslands (Woinarski 2002g).	The project area is well south of the known distribution of this species, however, suitable tall forest habitats do exist along the pipeline corridor, especially near the west and east coasts of the Top End. The possibility of this species occurring in the project area can not be discounted, however, removal of tall forest habitats within the pipeline corridor is not expected to cause long-term impacts on this species due to the wide spread availability of suitable habitat.	None
False Water Rat <i>Xeromys myoides</i>		NT	VUL	Inhabits a variety of well-watered habitats from mangrove forests to sedged lakes (Strahan 1995). Has been recorded in the NT from the South Alligator River, Daly River and Glyde River in north-east Arnhem Land (Woinarski <i>et al.</i> 2000a).	Unlikely to occur along the pipeline corridor as preferred habitat not present.	None
Northern Quoll <i>Dasyurus hallucatus</i>		NT	Nominated for listing as VUL	Known to occupy a range of habitats from Eucalyptus open forests, monsoon vine thicket, rocky environments and savanna woodlands (Maxwell <i>et al.</i> 1996).	Suitable habitats for this species occur across the full east to west length of the pipeline corridor. Direct destruction of habitats in the pipeline corridor is unlikely to cause long-term impacts on this species, however, in the absence of appropriate controls the spread of weeds and feral animals could cause long-term impacts on this species.	Moyle River survey sites 6A1, 6B1 and 6B2  KP 75 – KP 77
Northern Brush-tailed Phascogale <i>Phascogale tapoatafa pirata</i>	Darwin Coastal Arnhem Coastal	VUL	-	Tall, open forests dominated by <i>Eucalyptus miniata</i> and <i>E. tetradonta</i> . Few records on Cape York Peninsula, the Top End of the NT (Woinarski 2002h). The most recent mainland records are from Kakadu and Litchfield National	Suitable habitats for this species occur across the full east to west length of the pipeline corridor. In the Northern Territory, there are recent (since 1980) records from the Tiwi Islands, Cobourg Peninsula, Groote Eylandt, West Pellew Island, Kakadu National Park (notably around Jabiru	None

Species name	Bioregions along route	NT listing	EPBC listing	Preferred Habitat and Known Distribution	Likelihood of occurrence\potential impacts	Known records in corridor
				Parks.	and near Jim Jim ranger station), and Litchfield National Park. There are older records from the Gove and Katherine areas. The possibility of this species occurring in the project area can not be discounted, however, removal of tall forest habitats within the pipeline corridor is not expected to cause long-term impacts on this species due to the wide spread availability of suitable habitat.	
Northern Hopping Mouse <i>Notomys aquilo</i>	Arnhem Coastal	VUL	VUL	Largely restricted to sandy substrates, particularly those supporting floristically diverse heathlands and/or grasslands (Woinarski <i>et al.</i> 1999). Majority of specimens known from Groote Eylandt and coastal north-eastern Arnhem Land.	Unlikely to occur along the pipeline corridor as preferred habitat not present.	None
Bare-rumped Sheath-tail Bat <i>Saccolaimus saccolaimus nudichuniatus</i>	Darwin Coastal	DD	EN	Open Pandanus woodland fringing the sedgelands of the South Alligator River and eucalypt dominated, tall-open forests. It has a large distribution from south-east Asia to the Solomon Islands including north-east Queensland and the Northern Territory (Duncan, Baker and Montgomery 1999).	The pipeline corridor is well south of the only known record of this species in the Northern Territory and it is considered unlikely that the species occurs along the pipeline corridor. <i>S. saccolaimus</i> is an “uncluttered space” foraging bat which means it forages above the tree canopy and in open spaces, so a 30m clearing is unlikely to affect the foraging ability of this species (Milne pers comm. 2004).	None
<b>Birds</b>						
Red Goshawk <i>Erythroriorchis radiatus</i>	Arnhem Coastal Daly Basin Darwin Coastal	VUL	VUL	Coastal and sub-coastal tall open forests and woodlands, tropical savannas traversed by wooded or forested rivers, and along the edges of rainforest (Marchant & Higgins, 1993). Large distribution across much of northern Australia (Woinarski, 2001).	Suitable habitats for this species occur across the full east to west length of the pipeline corridor. Nest sites of this species are particularly vulnerable (Garnett and Cowley, 2000). The pipeline corridor is unlikely to cause any long-term impact on this species unless a nest site is disturbed. No nest sites have been identified in the pipeline corridor, however, measures to detect nest sites during construction should be put in place to avoid any potential impacts.	NT Fauna Atlas record 3.5km east of KP 928
Gouldian Finch	Gulf Falls	EN	EN	In the dry season and part of the late wet	Suitable habitats for this species occur along the	Chambers

Species name	Bioregions along route	NT listing	EPBC listing	Preferred Habitat and Known Distribution	Likelihood of occurrence\potential impacts	Known records in corridor
<i>Erythrura gouldiae</i>	and Uplands Daly Basin Victoria Bonaparte			season, Gouldian Finches live and nest within wooded hills that contain Eucalyptus species (typically <i>E. tintinnans</i> and <i>E. brevifolia</i> ). In the wet season the birds move from the hills into the lowland drainage lines to feed on perennial grasses (Lewis, 2001).	pipeline corridor between KP 320 and KP 460, especially in the sandstone country around the Chambers River. The pipeline corridor largely avoids the sandstone ridges where Gouldian Finches prefer to nest, instead traversing the lowlands.	River survey sites 4B1 and 4C1  KP 443 to KP 445
Northern Shrike-tit <i>Falcunculus (frontatus) whitei</i>	Daly Basin Victoria Bonaparte Arnhem Coastal	DD	VUL	Sightings have been mainly recorded from woodlands dominated by <i>Eucalyptus miniata</i> , <i>E. tetradonta</i> or <i>Corymbia bleeseri</i> (Garnett and Crowley 2000). There are few records which are scattered from near Borroloola to the south-west Kimberley with various records from the Sturt Plateau and Arnhem Land (Woinarski 2002i).	Suitable habitats for this species occur across the full east to west length of the pipeline corridor, however, the paucity of knowledge of this species makes it difficult to determine where it may occur. The presence of this species in the pipeline corridor cannot be discounted, however, removal of eucalyptus woodland habitats within the pipeline corridor is not expected to cause long-term impacts on this species due to the wide spread availability of suitable habitat.	None
<b>Reptiles</b>						
Yellow-snouted Ground Gekko <i>Diplodactylus occultus</i>	Darwin Coastal	VUL	-	Known from only a few localities, almost entirely from the northwest areas of KNP and appear to occur in well-developed leaf litters and grasses in open Eucalyptus dominated forests (Beggs and Armstrong 2001).	The known range of this species does not extend to the pipeline corridor and it is considered highly unlikely that the species would occur there.	None
<b>Amphibians</b>						
Wood Frog <i>Rana daemeli</i>	Arnhem Coastal	VUL	-	Appears to be restricted to dense riparian vegetation, mainly rainforest or Pandanus thickets (Woinarski 2002j). Known from four sites in north-east Arnhem Land on the Giddy River and Cato River.	Suitable riparian rainforest habitats for this species occur where the pipeline corridor crosses the Latram River, Giddy River and Cato River, and the range of this species may extend to rivers further west of the Cato River although there are no previous records. At the river crossings where the frog is known to occur horizontal directional drilling techniques are recommended to avoid impacts on the riparian rainforest habitat. With these safeguards in place it is	Giddy River – KP 913 to KP 914  Cato River KP 880 – KP 881  Latram

Species name	Bioregions along route	NT listing	EPBC listing	Preferred Habitat and Known Distribution	Likelihood of occurrence\potential impacts	Known records in corridor
					unlikely that the pipeline will cause long-term adverse impacts on this species.	River – KP 922
<b>Invertebrates</b>						
Gove Crow Butterfly <i>Euploea alcathoe enastri</i>	Arnhem Coastal	EN	Nominated for listing as EN	Patches of tall forest associated with groundwater seepages. Known from only four locations including the upper Goromuru River (Wilson 2002).	Suitable wet rainforest habitats for this species do not occur in the pipeline corridor which was designed to avoid these sensitive habitat areas. It is unlikely that this species occurs in the pipeline corridor. In the absence of appropriate controls the spread of weeds and feral animals, especially Yellow Crazy Ants, could cause long-term impacts on this species.	None

### 4.3. Near-threatened

Fifty-five terrestrial fauna species are classified as Near-Threatened (excluding fish and invertebrates) in the Northern Territory. The known range of 26 of these species extends into the proposed pipeline corridor. These species are listed in **Table 4** along with an indication as to whether or not preferred habitats exist along the pipeline corridor.

**Table 4 Near-Threatened fauna species that potentially occur in the pipeline corridor.**

Species	Suitable habitats present	Recorded in corridor*
<b>Mammals</b>		
Northern Quoll <i>Dasyurus hallucatus</i>	Yes	75-77* (Moyle River)
Golden Bandicoot <i>Isodon auratus arnhemensis</i>	Yes	No
Lesser Wart-nosed Horseshoe Bat <i>Hipposideros stenotis</i>	Yes	No
Ghost Bat <i>Macroderma gigas</i>	No	354 (Fauna atlas)
Black-footed Tree-rat <i>Mesembriomys gouldii</i>	Yes	926 (Fauna atlas)
Northern Nailtail Wallaby <i>Onychogalea unguifera</i>	Yes	474 and 548 (Fauna atlas)
Western Chestnut Mouse <i>Pseudomys nanus nanus</i>	Yes	209 (Fauna atlas)
Pale Field-rat <i>Rattus tunneyi</i>	Yes	75-77 and 216-219* (Moyle River and Dorisvale)
Orange Horseshoe Bat <i>Rhinonycteris aurantius</i>	Yes	392 (Fauna atlas)
False Water Rat <i>Xeromys myoides</i>	Yes	No
Arnhem Sheathtail Bat <i>Taphozous kapalgensis</i>	Yes	No
<b>Birds</b>		
Australian Bustard <i>Ardeotis australis</i>	Yes	78 and 505 (Fauna atlas)
Bush Stone-curlew <i>Burhinus grallarius</i>	Yes	216-219* (Dorisvale)
Emu <i>Dromaius novaehollandiae</i>	Yes	366 and 897 (Fauna atlas)
Yellow-rumped Mannikin <i>Lonchura flaviprymna</i>	Yes	840* (Goromuru River)
Square-tailed Kite <i>Lophoictinia isura</i>	Yes	421 (Fauna atlas)
Grass Owl <i>Tyto capensis</i>	No	No
Clamorous Reed Warbler <i>Acrocephalus stentoreus</i>	No	No
Grey Falcon <i>Falco hypoleucos</i>	Yes	No
White-lined Honeyeater <i>Meliphaga albilineata</i>	Yes	No
Hooded Parrot <i>Psephotus dissimilis</i>	Yes	319, 322 and 444* (Chainman Creek, Chinaman Creek and Chambers River)
Banded Fruit-Dove <i>Ptilinopus cinctus</i>	Yes	No

Species	Suitable habitats present	Recorded in corridor*
<b>Reptiles</b>		
Chameleon Dragon <i>Chelosania brunnea</i>	Yes	No
Pig-nosed Turtle <i>Carettochelys insculpta</i>	Yes	No
Northern Blunt-spined Monitor <i>Varanus primordius</i>	Yes	444* (Chambers River)
* Recorded in field surveys		

#### 4.4. Species with a restricted distribution

The known ranges of 25 terrestrial fauna species that are endemic to the Top End region of the Northern Territory extend to the pipeline corridor. These species are listed in **Table 5** along with an indication of whether or not preferred habitats exist in the pipeline corridor.

**Table 5 Fauna species and sub-species endemic to the Top End of the Northern Territory that potentially occur in the pipeline corridor.**

Species	Suitable habitats present	Recorded in corridor*
<b>Mammals</b>		
False Water Rat <i>Xeromys myoides</i>	Yes	No
Fawn Antechinus <i>Antechinus bellus</i>	Yes	926 (Fauna atlas)
Kakadu Dunnart <i>Sminthopsis bindi</i>	Yes	216-219, 444* (Chambers River and Dorisvale)
Red-cheeked Dunnart <i>Sminthopsis virginiae nitela</i>	Yes	75-77, 216-219 and 840* (Moyle, Dorisvale and Goromuru)
Black Wallaroo <i>Macropus bernardus</i>	Yes	No
Northern Hopping-mouse <i>Notomys aquilo</i>	Yes	No
Dusky Rat <i>Rattus colletti</i>	Yes	741 (Fauna atlas)
<b>Birds</b>		
Hooded Parrot <i>Psephotus dissimilis</i>	Yes	319, 322 and 444* (Chambers River, Chainman Creek and Chinaman Creek)
<b>Reptiles</b>		
Dark-tailed Skink <i>Glaphyromorphus nigricaudis</i>	Yes	922* (Latram River)
Stout-tailed Skink <i>Glaphyromorphus crassicaudis arnhemicus</i>	Yes	No
<i>G. douglasi</i>	Yes	738 (fauna atlas)
Griffin's Lerista <i>Lerista griffini</i>	No	293 (fauna atlas)
Karl Schmidt's Lerista <i>Lerista karlschmidti</i>	Yes	No
Single-toed Lerista <i>Lerista stylis</i>	Yes	No
MacFarlane's Lerista <i>Carlia macfarlani</i>	Yes	922* (Latram River)

Species	Suitable habitats present	Recorded in corridor*
<i>Diporiphora albilabris sobria</i>	Yes	922 (Latram River)
Red-faced Turtle <i>Emydura victoriae</i>	Yes	No
<i>Gehyra pamela</i>	Yes	75-77* (Moyle River)
Robust Rainbow Skink <i>Carlia longipes</i>	Yes	75-77 and 444* (Moyle River and Chambers River)
<i>Ctenotus hilli</i>	Yes	319, 322, 444 and 840* (Chainman Creek, Chinaman Creek, Chambers River and Goromuru River)
Scant-striped Ctenotus <i>Ctenotus vertebralis</i>	Yes	444* (Chambers River)
Storr's Snake-eyed Skink <i>Morethia storri</i>	Yes	216-219 and 444* (Dorisvale and Chambers River)
Northern Ridge-tailed Monitor <i>Varanus primordius</i>	Yes	444* (Chambers River)
<b>Amphibians</b>		
Masked Rock Frog <i>Litoria personata</i>	No	No
Wood Frog <i>Rana daemeli</i>	Yes	911 (Fauna atlas)
* Recorded in field surveys		

#### 4.5. Significant fauna habitats

Field surveys undertaken to verify the environmental suitability of the proposed pipeline route resulted in most habitats of notable conservation significance to fauna being avoided. Where this was not possible, for example at riparian corridors, construction techniques that will minimise impacts have been recommended for inclusion in the EIS and EMPs being prepared for the project. The pipeline corridor and activities associated with construction will occur in proximity to significant fauna habitats including monsoon rainforest patches, riparian corridors and isolated permanent and semi-permanent wetlands. These habitat types are restricted in distribution and are of conservation significance as they typically exhibit high diversity, provide essential habitat for fauna with specific habitat requirements and act as a refuge habitat during the dry season. There are also habitats in or near to the proposed pipeline corridor that are known to support the 'threatened' Gouldian Finch *Erythrura gouldiae* and Wood Frog *Rana daemeli*. Habitats of significance to fauna are described below.

##### 4.5.1. Monsoon rainforest

Monsoon rainforests are considered to be a highly significant environment for wildlife, supporting a distinctive fauna (Woinarski [online] Accessed September 2004). All monsoon rainforest habitats are regionally significant through their role in maintaining the interconnectedness and integrity of the rainforest patches in the region. Studies of rainforest fauna have found that important relationships exist between rainforest patches and frugivorous birds and bats. The rainforests provide concentrations of fruit far greater than those across the rest of the landscape, especially in the wet season, and these attract flying-foxes and fruit-eating pigeons, orioles, cuckoos and figbirds. Many frugivorous birds (Price 2004; Price *et al.* 1999) and bats (Palmer *et al.* 2000; Bach *et al.* 1999) move between rainforest patches, and between the patches and the surrounding open forest tracking available resources. In doing this they assist in the dispersal of seed between patches to maintain gene flow. Price *et al.* (1998) found that there is probably a threshold level of rainforest habitat fragmentation and interconnectedness for each fauna species below which they will not survive. Conservation of the rainforest network environment is probably dependent upon the protection and maintenance of as

many patches as possible and extensive areas of their surrounding habitats (Price *et al.* 1999; Woinarski [online] Accessed September 2004).

The monsoon rainforest patches that occur in or near the proposed pipeline corridor are listed in **Table 6** along with an indication of whether or not there is potential for the project to impact on these habitats and the primary mitigation measures prescribed during the field surveys. In the country traversed by the proposed pipeline route through north-east Arnhem Land monsoon rainforest is known to be the primary habitat of the ‘threatened’ Gove Crow Butterfly *Euploea alcatheae enastri* and Wood Frog *Rana daemeli*. Spring-fed monsoon rainforest patches were identified at 2 locations during field surveys of the proposed pipeline corridor, the western edge of the Macadam Ranges (south KP 60-80) and Boggy Creek (north of KP 850). At each of these locations the pipeline corridor has been moved to avoid both direct and indirect impacts on these habitats and associated fauna. A further 3 sections of the proposed pipeline corridor (KP 348-356, KP 834-840 and KP 912-925) traverse within 2-5 km of monsoon rainforest habitats. It is not expected that the project will impact on these habitats.

**Table 6 Rainforest patches that occur in or near the proposed pipeline route.**

KP Range	Habitat description	Potential impact	Mitigation
KP 60 - 80	Spring-fed rainforest patches are common in the deeply dissected sandstone terrain in the Macadam Ranges to the south of the proposed pipeline route. The original route proposed for the pipeline traversed near to one of these patches, however, the route has subsequently been revised and now traverses 13 km to the north through steep rocky boulder slopes.	No	avoid
KP 348-356	Numerous dry rainforest patches occur 2-4 km north of the proposed pipeline corridor in association with limestone sinkholes near the Cutta Cutta Caves	No	avoid
KP 834-840	Numerous spring-fed rainforest patches occur 2-5 km north of the proposed corridor in association with the Goromuru River floodplain	No	avoid
KP 850	Large spring-fed rainforest patch on Boggy Creek. The original route proposed for the pipeline traversed through this rainforest patch, however, the route has subsequently been revised and now traverses 800m south through Melaleuca woodland.	No	avoid
KP 912-925	Numerous spring-fed and dry rainforest patches occur 2-4km north of the proposed pipeline route in associated with the Giddy River and Latram River systems and coastline	No	avoid

#### 4.5.2. Riparian corridors

Riparian corridors support a distinctive fauna and are regionally significant habitats through their role in providing resources essential to fauna species at certain times of their life cycle and through their role as refuge habitats during the dry season. The riparian habitat corridors associated with perennial watercourses traversed by the proposed pipeline corridor are identified in **Table 7** along with an indication of whether or not there is potential for the project to impact on these habitats and the primary mitigation measures prescribed during the field surveys.

**Table 7 Riparian corridors that occur in or near the proposed pipeline corridor.**

KP Location	Name	Lat	Long	Management
55	Anopheles Creek	-14.3804	129.9132	open trench crossing management (dry)
63	Chalanyi Creek	-14.3439	129.9766	open trench crossing management (dry)
74	branch of Moyle River	-14.2859	130.0528	open trench crossing management (wet)
75	Moyle River	-14.2770	130.0645	hdd

<b>KP Location</b>	<b>Name</b>	<b>Lat</b>	<b>Long</b>	<b>Management</b>
92	Moyle River upstream	-14.2828	130.2148	open trench crossing management (wet)
217	Whiskey Spring Creek	-14.4851	131.2282	open trench crossing management (wet)
231	Bradshaw Creek	-14.4902	131.355	open trench crossing management (wet)
266	Daly River	-14.5067	131.6763	hdd
309	Katherine River	-14.5835	132.0506	hdd
323	Chinaman Creek	-14.5863	132.1732	open trench crossing management (dry)
370	King River	-14.6085	132.6065	hdd
390	Maranboy Creek	-14.5999	132.7874	open trench crossing management (dry)
401	Beswick Creek	-14.5950	132.8964	hdd
424	Waterhouse River	-14.5784	133.1074	hdd
444	Chambers River	-14.5212	133.2746	open trench crossing management (wet)
463	Unnamed drainage	-14.4774	133.4409	open trench crossing management (dry)
499	Maiwok Creek	-14.3239	133.7273	open trench crossing management (wet)
506	Flying Fox Creek	-14.2868	133.7733	open trench crossing management (wet)
509	Derim Derim Creek	-14.2642	133.7935	open trench crossing management (wet)
538	Quibobikwi Creek	-14.0850	133.9765	open trench crossing management (dry)
550	Mainoru River	-14.0225	134.0682	hdd
570	Horse Creek	-13.8769	134.1773	open trench crossing management (wet)
579	Branch of Horse Creek	-13.8247	134.2386	open trench crossing management (wet)
600	Wilton River	-13.6931	134.3808	hdd
658	Branch of Annie Creek	-13.3576	134.7859	open trench crossing management (wet)
685	Annie Creek	-13.2040	134.9780	open trench crossing management (wet)
701	Goyder River	-13.1238	135.1036	hdd
786	Unnamed waterhole	-12.6855	135.6965	avoid - route moved 200m north
838	Goromuru River	-12.7074	136.1768	avoid - route moved 800m south
900m north KP851	Boggy Creek	-12.6530	136.2807	avoid - route moved 800m south
852	Boggy Creek	-12.6551	136.2895	hdd
873	branch of Cato River	-12.5639	136.4487	open trench crossing management (wet)
881	Cato River	-12.5103	136.4935	hdd
913	Giddy River	-12.3593	136.7072	hdd
922	Latram River	-12.3008	136.7654	hdd
929	Unnamed creek	-12.2408	136.7882	open trench crossing management (wet)
Mainoru bypass	Unnamed creek	-12.2045	136.7697	open trench crossing management (dry)
Mainoru bypass	Jasper Creek	-13.9054	134.4401	open trench crossing management (dry)

KP Location	Name	Lat	Long	Management
Mainoru bypass	Unnamed drainage	-13.6805	134.6286	open trench crossing management (dry)
Mainoru bypass	Unnamed drainage	-13.4950	134.7160	open trench crossing management (dry)
Mainoru bypass	Branch of Annie Creek	-13.3727	134.7774	open trench crossing management (wet)

A number of the riparian corridors traversed by the proposed pipeline corridor support forest to closed forest vegetation with a dense cover of monsoon rainforest flora species and/or *Melaleuca* trees. These habitat types typically exhibit a higher bird species richness and greater abundance of many species (Woinarski *et al.* 2000b). Fauna species commonly associated with monsoon rainforests (Bach *et al.* 1999; Price *et al.* 1998; Woinarski 1993) were found in some of the riparian corridor habitats along the pipeline corridor during the field surveys (**Table 8**). It is likely that fauna move seasonally between riparian and non-riparian vegetation and this has been demonstrated to be the case for birds in the Top End (Woinarski *et al.* 2000b). This study emphasised the conservation value of riparian vegetation, and the need to maintain connections between riparian and non-riparian vegetation.

**Table 8 Species commonly associated with monsoon rainforests that were located along pipeline route.**

Common Name	Scientific Name	Survey locations where identified
Varied Triller <sup>(2)</sup>	<i>Lalage leucomela</i>	Chambers River
Little Shrike-thrush <sup>(2)</sup>	<i>Colluricincla megarhyncha</i>	Chainman Creek and Chinaman Creek
Yellow Oriole <sup>(1) (2) (3)</sup>	<i>Oriolus flavocinctus</i>	Goromuru River
Spangled Drongo <sup>(2)</sup>	<i>Dicrurus bracteatus</i>	Moyle River, Latram River, Goromuru River
Figbird <sup>(1) (2)</sup>	<i>Sphecothebes viridis</i>	Chambers River
Great Bowerbird <sup>(1)</sup>	<i>Chlamydera nuchalis</i>	Chambers River, Chainman Creek and Chinaman Creek, Dorisvale, Latram River, Goromuru River
Black Flying-fox <sup>(1)</sup>	<i>Pteropus alecto</i>	Latram River, Goromuru River
Bar-shouldered Dove <sup>(2)</sup>	<i>Geopelia humeralis</i>	Moyle River, Chainman Creek and Chinaman Creek, Dorisvale, Latram River, Goromuru River
White-gaped honeyeater <sup>(2)</sup>	<i>Lichenostomus unicolor</i>	Moyle River, Chambers River, Dorisvale, Goromuru River
Dusky Honeyeater <sup>(2)</sup>	<i>Myzomela obscura</i>	Moyle River, Latram River, Goromuru River
Mistletoebird <sup>(2)</sup>	<i>Dicaeum hirundinaceum</i>	Moyle River, Chainman and Chinaman, Dorisvale, Latram River, Goromuru River
Northern Fantail <sup>(2)</sup>	<i>Rhipidura rufiventris</i>	Moyle River, Dorisvale, Latram River, Goromuru River
White Bellied Cuckoo Shrike <sup>(2)</sup>	<i>Coracina papuensis</i>	Moyle River, Chambers River, Chainman Creek and Chinaman Creek, Dorisvale, Latram River, Goromuru River
Orange-footed Scrubfowl <sup>(2)</sup>	<i>Megapodius reinwardt</i>	Latram River
Azure Kingfisher <sup>(2)</sup>	<i>Ceyx azurea</i>	Chainman and Chinaman, Latram River, Goromuru River
Grey Whistler <sup>(2)</sup>	<i>Pachycephala simplex</i>	Latram River
Shining Flycatcher <sup>(2)</sup>	<i>Myiagra alecto</i>	Moyle River, Goromuru River
Rufous Fantail <sup>(2)</sup>	<i>Rhipidura ruffifrons</i>	Latram River

Bach *et al.* 1999<sup>(1)</sup>; Woinarski 1993<sup>(2)</sup>; Price *et al.* 1999<sup>(3)</sup>

#### 4.5.3. Wetlands of regional significance

The wetlands of the monsoonal wet-dry tropics of the Top End provide significant habitats for fauna, especially birds, and are recognised for their high conservation value (Whitehead and Chatto 1996). Isolated permanent and semi-permanent swamps were identified at 15 locations along the proposed pipeline corridor during the field surveys. These swamps are regionally significant through their role in providing resources essential to fauna species at certain times of their life cycle and through their role as refuge habitats during the dry season. At 10 of the locations where swamps were identified the pipeline corridor has been moved to avoid these habitats, and at the remaining 5 locations specific mitigation measures should be prescribed to minimise the impacts of construction activities. The permanent and semi-permanent wetlands that occur in or near the proposed pipeline corridor are identified in **Table 9** along with an indication as to whether or not there is potential for the project to impact on these habitats and the primary mitigation measures recommended during the field surveys.

**Table 9 Wetlands of regional significance that occur in or near the pipeline corridor.**

KP Range	Habitat description	Potential impact	Mitigation
KP 107-108	Permanent spring-fed swamp	yes	open trench management for wet areas
KP 111-112	Permanent spring-fed swamp	yes	open trench management for wet areas
1.4km west KP 141	Permanent spring-fed open swamp	yes	move route 6 km south to avoid swamp
KP 167-168	Permanent Grevillea swamp	yes	open trench management for wet areas
1 km south KP 389	Permanent Melaleuca swamp	no	none required – route avoids this location
2km north KP 413	Spring-fed swamp	no	none required – route avoids this location
1.2 km south-east KP 577	Permanent spring-fed swamp	no	none required – route avoids this location
KP 629-630	Semi-permanent Melaleuca swamp	yes	move route 100 m north
KP 711-712	Open swamp	yes	move route 500 m south
KP 734-735	Permanent spring-fed open swamp	yes	open trench management for wet areas
KP 786-787	Permanent open waterhole off main river channel	yes	move route 200 m north
KP 788-789	Semi-permanent open waterhole in depression	yes	move route 100 m north
KP 934	Permanent Melaleuca swamp	yes	open trench management for wet areas
Mainoru bypass	Permanent spring-fed Pandanus and Melaleuca swamp	yes – if bypass route used	move route to avoid permanently wet area
Mainoru bypass	Small (2 m x 2 m) rock hole with permanent water	yes – if bypass route used	move route to avoid rock hole

#### 4.5.4. Moyle floodplain and Hyland Bay Wetlands of National Significance

The proposed pipeline corridor between KP 17 and KP 82 traverses the upstream section of the Moyle Floodplain and Hyland Bay System, which is a ‘Wetland of National Significance’. This wetland system is most notable for its waterbird fauna and is considered to be one of the most important areas for colonial breeding waterfowl in the Northern Territory (Chatto 2000; National Land and Water Resources Audit 2002). Where the pipeline corridor traverses within the nominated boundaries of this wetland system the country is dominated by Eucalyptus woodland to open forest with tussock grass

understorey. This habitat is dissected by seasonally inundated floodplain habitats and riparian forests associated with Anopheles Creek and Chalanyi Creek which are the main surface water inflows to the southern part of the wetland system. The pipeline corridor does not affect any known important waterbird habitats (Chatto pers. comm. 2004). The potential for the pipeline to impact on the fauna associated with the Moyle floodplain is considered to be low as the pipeline corridor has been chosen to avoid permanent floodplain swamps and horizontal directional drilling techniques will be used to bore under the Moyle River.

#### *4.5.5. Arafura Swamp Wetland of National Significance*

The pipeline corridor at KP 701 traverses the Goyder River which is the main surface inflow to Arafura Swamp. The swamp is a 'Wetland of National Significance' and is also listed on the Register of the National Estate for its natural heritage values. The Arafura Swamp is a significant breeding area for the Magpie Goose *Anseranus semipalmata*, Saltwater Crocodiles *Crocodylus porosus* and Freshwater Crocodiles *Crocodylus johnstonii*. The swamp also supports abundant water populations and at least 3 significant waterbird breeding rookeries (Whitehead and Chatto 1996). The pipeline corridor traverses the Goyder River catchment between KP 699 and KP 781 approximately 25 km south of the Arafura Swamp. This area is listed on the Register of National Estate for its indigenous cultural heritage values. A number of isolated permanent swamp habitats, which are important fauna habitats were identified in the catchment during field surveys and in all cases the pipeline corridor has been moved to avoid impacts on these habitats (**Table 9**). Horizontal directional drilling techniques will be used to bore under the Goyder River if this is considered to be culturally appropriate by the Traditional Owners of the country. It is expected that the pipeline will have minimal impact on waterbirds that are attracted to the Arafura Swamp (Ray Chatto pers. comm. 2004) or on the conservation values of the swamp in general.

#### 4.5.6. Threatened species habitats

Gouldian Finches *Erythrura gouldiae* were recorded in Eucalyptus woodlands on rocky sandstone hills near the Chambers River (KP 443 – 445). This species had not previously been recorded from the area, however, the *Eucalyptus tintinnans* woodland habitats that are important breeding habitat for the Gouldian Finch are common throughout the area.

Wood Frogs *Rana daemelli* were not recorded during the terrestrial fauna surveys but were recorded during the aquatic surveys at the Giddy River (KP 913) and Cato River (KP 880-881). These rivers support dense riparian rainforest habitats which are the primary habitat of the Wood Frog.

The potential impacts of the proposed project on these species are discussed in **Section 5.3**.

## **5. POTENTIAL ENVIRONMENTAL EFFECTS AND MANAGEMENT RECOMMENDATIONS**

The potential effects of the proposed TTP project on terrestrial fauna have been minimised during the design phase by locating the pipeline corridor and other major project infrastructure to avoid key fauna habitats such as monsoon rainforests and wetlands, and specifying requirements for horizontal directional drilling of river and creek crossings that support significant riparian habitats. The original corridor proposed for the pipeline was rerouted at a number of locations during the route selection and verification surveys undertaken (October to November 2003 and July to September 2004) to avoid potentially unacceptable impacts to sensitive habitats. Taking fauna habitat values into account during the design process will minimise, but not eliminate, the potential impacts of the proposed pipeline.

A number of potential impacts that could result from the construction and operation of the proposed pipeline were identified, including:

- Disturbance to fauna movement and resource use;
- Habitat loss from vegetation clearing activities;
- Impacts on species of conservation significance;
- Fauna capture in the open trench; and
- Introduction of weeds and exotic species.

These potential impacts are discussed in the sections below.

The construction of the pipeline and associated above ground facilities will result in the disturbance or loss of fauna habitats and it is expected that there will be associated localised impacts on the fauna that occur in the proposed pipeline corridor. For most of the species identified in this report, this is unlikely to cause any significant long-term effects as all habitats that occur in areas proposed for development are well represented in areas away from the pipeline corridor. The cleared 'Right of Way' that remains once the pipeline has been constructed is unlikely to act as a barrier to movement of species as long as appropriate revegetation of the ground layer occurs and the corridor is not fenced. Therefore, it is expected that the majority of the potential effects on fauna will be localised and will be associated with short-term disturbance during the construction phase.

Other potential impacts, such as those associated with changes to hydrology, water quality, effluent and waste management, hazardous substances and increased risk of fire, are considered to have a lower potential impact on fauna, and therefore are not discussed in detail in this report.

There is significant scope for reducing the potential ecological impacts of the project by incorporating fauna considerations in the construction specifications. There are also opportunities to mitigate some of the potential adverse effects by implementing management actions before, during and after construction. Recommendations on management measures that should be implemented to minimise impacts on fauna are also identified in this section. Additional measures for minimisation of site specific impacts should be developed following determination of the final design specifications.

### **5.1. Short-term loss of species**

#### *5.1.1. Effects*

Short-term disturbance and possible loss of species in and adjacent to the pipeline corridor during the construction phase is likely to represent the major environmental effect of the project on terrestrial fauna. Approximately one-third of the proposed pipeline corridor traverses pastoral leases and agricultural properties and the remaining two-thirds traverses largely natural, remote areas, which are generally visited only by local Aboriginal people if at all, and where there is no industrial development for hundreds of kilometres. The increased levels of activity during the construction phase will

represent a substantial deviation from the ambient environmental conditions in all areas along the corridor. Construction activities will involve a large number of personnel, vehicles and plant moving around the project area, and along access tracks that presently receive very little traffic. This will result in increased noise levels, creation of dust, increased erosion along tracks and generally high levels of disturbance for the period in which construction will take place.

The disturbance caused by construction activities will probably cause some fauna to avoid using habitats in the surrounding areas for the duration of construction and possibly longer. A small number of fauna are particularly sensitive to disturbance but most species are generally not significantly affected in the long term by disturbances, such as increased noise, light and dust that will be associated with construction of the pipeline. For most of the fauna species that occur in the pipeline corridor, this short term disturbance is unlikely to cause significant long term effects, firstly because the habitats most sensitive to disturbance such as monsoon rainforests and wetlands have been avoided, and secondly because all habitats that occur inside the pipeline corridor are well represented in areas well away from where construction activities will take place. Species that do continue to use the area during construction will be at risk of being hit by vehicles both on roads and along the pipeline corridor, especially near riparian areas and water sources where animals tend to congregate in the dry season. Most fauna species that avoid the pipeline corridor and other activity areas during construction will probably return to the area as the activity levels decrease and the disturbed areas are rehabilitated.

### *5.1.2. Management*

The following recommendations should be considered to minimise disturbance to fauna:

- Develop a noise reduction strategy for the construction and operational phases of the project. Ensure blasting activities are kept to the absolute minimum amount required.
- Implement dust minimisation strategies.
- Restrict vehicle travel on access routes during both the construction and operation phases of the project to daylight hours, avoiding dusk and dawn in particular and between sunset and sunrise where possible to minimise fauna casualties.
- Ensure that all equipment and vehicles being used during construction and operation are maintained via regular routine maintenance schedules to ensure that they are operating at an optimal level and not creating unnecessary noise and air pollution.

## **5.2. Removal and fragmentation of fauna habitats**

### *5.2.1. Effects*

Construction of the pipeline may cause a decline in fauna habitat values both directly through removal or disturbance of vegetation, and indirectly through changes to local environmental conditions such as weed invasions, increased numbers of feral animals and changes in fire regimes. The proposed pipeline corridor, above ground facilities and construction camps are located in areas of intact native vegetation which provide habitats for numerous species of fauna. Most of the habitats that occur in the pipeline corridor, especially on Aboriginal owned land (approximately two-thirds of the pipeline corridor) are largely undisturbed by humans and as a result are in good condition. The majority of the pipeline corridor through pastoral and agricultural lands (approximately one-third of the corridor) also traverses habitats that are in good condition, although in some areas, weeds, cattle and feral animals have degraded the habitat value to fauna. It is expected that the extent of clearing associated with the project is unlikely to have a significant long-term impact on habitat availability for fauna because all habitats within the pipeline corridor are represented by large areas of similar habitat in good condition outside of the corridor, and sites for construction camps and above-ground facilities have been chosen to avoid sensitive habitat areas.

The greatest potential for impacts on fauna will be at the riparian corridors traversed by the pipeline corridor. Riparian vegetation communities are widespread and common, however, each community is ecologically significant and plays a direct role in maintaining the ecological stability of the particular watercourse with which it is associated. Riparian zones are typified by dense vegetation with large trees that provide habitat for many fauna species at certain stages of their life cycle, and refuge habitat during the dry season. Riparian habitats of high conservation value, and where impacts of constructing the pipeline using open trench techniques would cause unacceptable impacts to habitat values, were identified during the route selection and verification surveys. Horizontal directional drilling has been recommended as a way to avoid impacts on these habitats. At those crossings that will be constructed using open trenching techniques clearing of riparian vegetation is unlikely to cause long-term impacts on downstream riparian habitats values as long as construction activities are undertaken as early as possible in the dry season, and appropriate management strategies are in place during construction and rehabilitation. Construction activities may cause short-term disturbance to fauna utilising riparian areas in the pipeline corridor, however, it is expected that because the construction activities are confined to a 30 m wide corridor fauna will be able to escape the disturbance and use similar habitats nearby.

Changed environmental conditions will occur at the edges of areas cleared for construction activities (edge effects) (Ford *et al.* 2001; Hobbs 2001) which may create conditions for adverse environmental impacts by increasing susceptibility to weed incursions, feral animal invasion and changed fire regimes. Edge effects can act as a barrier to animal movement between habitat patches (Kozakiewicz 1993), or can affect animal movement by creating more complex movement paths as individuals approach a barrier, withdraw, and approach again (McDonald and St Clair 2003). The magnitude of edge and barrier effects will depend on species behaviour and mobility (Goosem *et al.* 2001). Species of fauna that are habitat specialists or that move amongst several habitats are particularly at risk (Ford *et al.* 2001; Harrington *et al.* 2001). A study into the effects of habitat fragmentation on selected species of mammals, birds and reptiles in the Northern Territory, found that certain species were excluded from areas where less than a 30% of bush remained within a 4 km radius (Parks and Wildlife Commission of the Northern Territory 2001). Based on these findings, the proposed project is unlikely to result in the exclusion of most species of fauna in the long-term.

### 5.2.2. Management

The following management measures should be considered to minimise the effects of habitat loss and fragmentation associated with the project:

- Keep the extent of the working footprint for all project components, including access tracks, borrow pits, construction camps and above-ground infrastructure to the minimum area necessary for construction and operation activities.
- Use directional drill crossings at sensitive watercourses as recommended by an environmental scientist.
- Crossing selection at ephemeral watercourses should avoid ponds of permanent or semi-permanent water that provide fauna refuges in the dry season.
- Minimise the working width at all watercourse crossings and construct vehicle crossings to minimise bank disturbance during construction.
- Avoid clearing of large mature trees, especially fruiting trees (such as *Ficus virens*, *Terminalia microcarpa*, *Syzygium nervosum* and *Canarium australianum*), which provide important habitat and act as a stepping stone between fragmented habitats (PWCNT 2001).
- Construct watercourse crossings as early as possible in the dry season and fast track construction activities and rehabilitation and revegetation to minimise the amount of time that the habitat is disturbed.
- Clearly mark the work area using construction pegs, construction flagging, or other temporary measures, and identify areas requiring special protection as 'no-go' areas on construction plans and on the ground.
- Incorporate penalties for breach of environmental protection conditions into construction contracts.

- Rehabilitate and revegetate the ROW, construction camps, borrow pits and all areas cleared during construction that do not need to remain cleared for operational purposes.
- Consult with Traditional Owners and other Aboriginal representative groups, to develop appropriate mitigation strategies.
- Stage clearing of vegetation in accordance with the construction schedule to minimise the time between clearing and rehabilitation.
- Design additional project infrastructure, including access routes, vehicle and plant storage and turn-around areas, borrow pits, compressor stations and scraper facilities so that:
  - previously disturbed areas are used where possible;
  - areas of sensitive vegetation are avoided; and
  - low impact construction techniques are used in environmentally sensitive areas.
- Locations of areas of disturbance that have not yet been assessed by an environmental scientist should be assessed prior to construction.
- Develop a rehabilitation plan prior to construction. Include a rehabilitation schedule, proposed techniques, species proposed for use, and the following general principles:
  - Stockpile top soil and suitable vegetative matter near to the area from which it was taken so that it can be respread over the area during rehabilitation.
  - Locate stockpiles within the marked working width.
  - Store excavated soil on-site in an area previously cleared of vegetation, or remove to an appropriate area off-site. Any on-site or off-site location needs to be approved by DIPE prior to dumping.
  - Clearly mark appropriate locations for dumping of spoil.
- Brief all construction staff on the importance of protecting fauna species and habitats. This briefing must include the requirements for clearing and detail the construction worker's responsibility when conducting clearing activities and when carrying out rehabilitation.

### 5.3. Impacts on species of conservation significance

#### 5.3.1. Effects

Three listed 'threatened' species, the Gouldian Finch *Erythrura gouldiae*, Red Goshawk *Erythrotriorchis radiatus* and Wood Frog *Rana daemeli*, and one species proposed for listing as a threatened species under the EPBC Act, the Northern Quoll *Dasyurus hallucatus*, have been recorded in habitats in or near the pipeline corridor. The potential impacts of the project on each of these species are discussed below.

#### **Gouldian Finch**

Suitable habitats for this species occur along the pipeline corridor between KP 320 and KP 460, especially in the sandstone country around the Chambers River. These habitats are generally avoided by the pipeline corridor, which traverses lower ground rather than the rocky slopes and hill tops which are the preferred habitat of the Gouldian Finch. Advice from the NT Parks and Wildlife Service indicates that site number 4C1 where Gouldian Finches were identified during the fauna surveys could be an important breeding site for the finch, and accordingly there should be at least a 500 m buffer between the pipeline corridor and the whole sandstone spur where site 4C1 is situated (Palmer pers comm. 2004). The pipeline corridor is 1.6 km north of the area identified as potentially important habitat, therefore it is expected that impacts on the species will be minimal.

#### **Red Goshawk**

Tall woodland and forest habitats dissected by wooded riparian corridors are the habitats used by the Red Goshawk and these occur across the full east to west length of the pipeline corridor. Nest sites of this species are particularly vulnerable to disturbance (Garnett and Cowley, 2000). The pipeline

corridor is unlikely to cause any long-term impact on this species unless a nest site is disturbed. No nest sites have been identified in the pipeline corridor.

### **Wood Frog**

Suitable riparian rainforest habitats for this species occur where the pipeline corridor crosses the Latram River, Giddy River and Cato River, and its range may extend to rivers further west of the Cato River, although there are no previous records. At the three river crossings where the frog is known to occur, it is recommended that the riparian rainforest habitats be protected by using horizontal directional drilling techniques to bore under the river. Feral pig activity as well as altered fire regimes have been identified as potential threatening processes for this species by degrading suitable, preferred habitat (Woinarski 2002j). Appropriate measures to minimise feral animal and weed invasions as a result of construction activities will be critical to minimising impacts on the riparian rainforest habitats that the Wood Frog utilises. With these safeguards in place it is not expected that the pipeline will cause long-term adverse impacts on this species.

### **Northern Quoll**

This species occurs in a wide range of habitats including eucalyptus woodlands and forests, rocky areas and savanna woodlands all of which occur across the full east to west length of the pipeline corridor. Direct destruction of habitats in the pipeline corridor is unlikely to cause long-term impacts on the Northern Quoll because suitable habitats are readily available away from the pipeline corridor. Of greater concern is the potential for the project to increase the rate of spread of the Cane Toad *Bufo marinus* as poisoning from the Cane Toad *Bufo marinus* has been identified as a key threatening process for the Northern Quoll (Maxwell et. al. 1996). Northern Quolls were recorded in the pipeline corridor near the Moyle River, an area that has not yet been affected by Cane Toads. With safeguards in place to ensure that the spread of Cane Toads into the west of the Northern Territory is not assisted, it is not expected that the project would cause any long-term impacts on this species.

### **Other Threatened Species**

A further tree 'threatened' species, the Brush-tailed Tree-rat *Conilurus penicillatus*, Brush-tailed Phascogale *Phascogale tapoatafa pirata* and Northern Shrike-tit *Falcunculus (frontatus) whitei* may occur in or near the pipeline corridor based on our knowledge of suitable habitats that are present. Each of these species is wide ranging and utilises Eucalyptus woodland and forest habitats that are very common outside of the pipeline corridor. For this reason it is not expected that the proposed project would cause significant impacts on these species.

The tall spring-fed forest patches associated with groundwater seepages inhabited by the 'threatened' Gove Crow Butterfly *Euploea alcaethoe enastri* do not occur in the pipeline corridor, however, these habitats may be sensitive to improved road access to Gove and associated increases in fire activity (Wilson 2002) which could occur as a result of the proposed project. The spread of the Yellow Crazy Ant *Anoplolepis gracilipes* is also thought to potentially impact the Gove Crow Butterfly as it also favours permanently wet forest patches. Appropriate measures to minimise feral animal and weed invasions as a result of construction activities will be critical to minimising impacts on the habitats of the Gove Crow Butterfly. With these safeguards in place it is not expected that the pipeline will cause long-term adverse impacts on this species.

### **Migratory Species**

A number of the EPBC-listed migratory birds have been recorded in the pipeline corridor, however, no significant shorebird or waterbird colonies are known to occur in proximity to any aspects of the proposed project (Chatto 2003, 2001, 2000). It is expected that migratory species can cope with the clearing of a 30 m corridor, provided that the pipeline does not traverse any colonies (Woinarski pers comm. 2001). The likelihood of disturbing colonies has been minimized by selecting the pipeline corridor to avoid wetland areas, and no colonies were observed during surveys of the pipeline corridor.

It is unlikely that the project will cause significant long-term impacts on populations of the Freshwater Crocodile *Crocodylus johnstoni* or Saltwater Crocodile *Crocodylus porosus*. During the construction of watercourse crossings the movement of these species will be restricted, however, it is expected that as long as access along the watercourse is restricted only for the time that it takes to construct the

crossing, there will not be any significant impacts. Crocodiles are likely to move away from an area during construction activities, however, the potential threat that they pose to construction workers will need to be managed with appropriate education strategies.

### 5.3.2. Management

**Table 10** documents recommended management measures to minimise impacts on fauna species of conservation significance.

**Table 10 Management of potential impacts on species of conservation significance.**

Species	Route section	Management recommendations
Gouldian Finch <i>Erythrura gouldiae</i>	KP 427 – 460	Maintain at least a 500 m distance between any disturbance and the Gouldian Finch habitats between KP 443 and KP 445 near the Chambers River Maintain route design to traverse lowlands avoiding rocky hills
Red Goshawk <i>Erythrotriorchis radiatus</i>	All	Measures to detect nest sites and avoid disturbance
Northern shrike-tit <i>Falcunculus (frontatus) whitei</i>	All	Implement an exotic species management plan Implement a fire management plan
Northern Quoll <i>Dasyurus hallucatus</i>	All	Implement an exotic species management plan Implement a fire management plan
Northern Brush-Tailed Phascogale <i>Phascogale tapoatafa pirata</i>	All	Implement an exotic species management plan Implement a fire management plan
Brush-tailed Tree-rat <i>Conilurus penicillatus</i>	All	Implement an exotic species management plan Implement a fire management plan
Wood Frog <i>Rana daemeli</i>	KP 922 KP 880 KP 913	Bore under the Latram River, Giddy River and Cato River Implement an exotic species management plan Implement a fire management plan
Gove Crow Butterfly <i>Euploea alcatheae enastri</i>	KP 880 - 943	Implement an exotic species management plan
Migratory Species	All	Maintain at least 200m distance between open swamps and any disturbance Minimise construction time at waterways crossings

## 5.4. Fauna capture in open trench

### 5.4.1. Effects

Construction of the pipeline has the potential to cause fauna mortality due to capture in the open trench during construction. Animals that are captured in trenches are exposed to various elements such as stress, predators, effects from the sun and subsequent dehydration (Woinarski *et al.*, 2000c). The pipeline route has been designed to avoid areas of high faunal conservation value such as monsoon vine forests, wetlands and riparian areas, a strategy recommended by Woinarski *et al.* (2000c). Construction will occur simultaneously in four sections along the corridor to minimise construction times. It is expected that these measures will minimise the number of animals that become trapped in the open trench. However, it is inevitable that a large number of animals will still be captured and therefore appropriate measures must be in place to facilitate their escape or removal so that fatalities are minimised.

### 5.4.2. Management

Investigations of wildlife mortality in a pipeline trench in the NT (Woinarski *et al.* 2000c) resulted in a series of recommendations to reduce fauna capture and death during trench construction (**Table 11**).

The procedures recommended by Woinarski *et al.* (2000c) should be considered as a way to minimise fauna mortality associated with the project.

**Table 11 Recommendations to reduce capture and mortality of fauna in pipeline trench.**

Type of measure	Recommended procedure	Explanation
Construction operational	Undertake operations in the most benign season (i.e. in the second and third quarters).	Wildlife mortality is likely to be highest in hot (or very cold) weather; Wildlife activity may also be higher in warm weather than cool weather, so capture rates would be greater.
Construction operational	Interrupt trench with frequent "escape ramps" for captured wildlife.	Exit points from the trench will enable trapped animals to leave the trench: sloping ramps away from the trench every 200-500m should be sufficient for most species.
Construction operational	Minimise the time the trench is opened, through careful planning of construction and pipe laying.	Fewest animals will be trapped if pipe laying (and immediately thereafter trench filling) occurs within 24 hrs of trench opening.
Construction operational	Site pipeline route to avoid areas of exceptional conservation values (eg. remnant bushland, essential habitat for threatened species, etc.).	These areas are likely to contain species of high conservation value, so they should be avoided.
Inspection	Ensure that trenches are inspected frequently (by a wildlife handler).	Animals captured in the trench should be removed, identified and released in a vegetated area near to where it was captured. Trench inspections and collection and removal of species must be undertaken by an experienced wildlife handler to facilitate accurate identification and minimise stress to the animal.  The data obtained from these collections will form a valuable information source, and may be a condition of approval by the NT Govt.

Source: Adapted from Woinarski *et al.* (2000c).

## 5.5. Introduction and spread of weeds and exotic fauna species

### 5.5.1. Effects

Activities associated with the construction and operation stages have a high potential to introduce weeds and feral animals into many remote areas that are currently relatively unaffected by exotic species. The absence of exotic species in these areas increases the value of habitats to native fauna, and makes them regionally important in the context of the rapid spread of weeds and feral animals that is being witnessed across many regions in the Top End. The greatest risk of weeds and feral animals being introduced and spread will occur during the construction phase of the project when plant and equipment sourced from elsewhere in the region and Australia may act as vectors for the introduction of exotic species to the project area. Road access routes to the project area from Darwin, Katherine and Nhulunbuy traverse areas where infestations of weed species declared under the *NT Weed Management Act* are present, and where the Cane Toad *Bufo marinus* and the Yellow Cray Ant *Anoplolepis gracilipes* are currently found. The pipeline corridor also traverses significant infestations of a number of declared weed species mainly on the pastoral and agricultural properties traversed between KP 214-374 and KP 460-577. The construction and maintenance of a right of way (ROW) cleared of tall vegetation may facilitate movement of feral grazing animals (i.e. cattle, donkey, buffalo), and assist the dispersal of Cane Toads and the Yellow Crazy Ant.

It is highly likely that without appropriate management during construction, as well as ongoing monitoring during operation of the pipeline, weeds and exotic fauna will become established in previously unaffected areas. If exotic species did become established in previously unaffected areas they would compete with and in some places displace native species of flora and fauna. In the case of the grassy weed species, especially Gamba Grass *Andropogon gayanus* and Mission Grasses *Pennisetum polystachion* and *P. pedicellatum* which are present along access routes to the project area, they can also create conditions for hot, intense fires that adversely impact on native vegetation and fauna. Cane Toads may cause a decline in numbers of some native fauna species that eat the Toad, or through competition for resources. Crazy ants *Anoplolepis gracilipes* are capable of forming multi-queened super colonies that can expand at a rate of three metres each day or one kilometre a year and will kill fauna and reduce the health and vigour of vegetation. They may also be harmful to human health as they spray formic acid as a defence mechanism and to subdue prey. It is inevitable that weeds and exotic fauna will be moved around by construction activities, and in light of this, strict quarantine, washdown and inspection measures, supported by an ongoing monitoring program, are imperative to minimise potential negative effects on native fauna.

#### 5.5.2. Management

The following management measures are recommended to minimise the introduction and spread of exotic plants and animals during project construction and operation:

- Consult with the Department of Infrastructure, Planning and Environment - Weeds Branch to develop an exotic species management programme for construction and operation, incorporating the elements identified below.
- Identify the locations of all existing weed infestations along the pipeline corridor and establish quarantine, washdown and inspection procedures to ensure that weeds are not spread out of these areas.
- Identify and treat existing weed infestations in the pipeline corridor, along access routes, at construction camp sites and at borrow pits prior to construction activities.
- Identify all known infestations of the Crazy Ant in proximity to the pipeline corridor and implement specific quarantine, washdown, inspection and monitoring to ensure that this species is not spread.
- Inspect all vehicles, plant and equipment for Cane Toads prior to travelling west of the Daly River.
- Educate all project personnel about exotic species present in the areas in which they will be working and establish a strategy for personnel to report weed infestations and exotic animal sightings.
- Only use species native to the area in rehabilitation and landscaping, and determine species suitability for use in consultation with experts in rehabilitation techniques in tropical environments.
- Prohibit taking of domestic animals into the pipeline corridor.

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**Appendix 1**  
**Site Photos**

## Appendix 1 Photos of survey sites

### Dorisvale/Bradshaw Survey Sites



**Site 7A1 Open Woodland**



**Site 7A2 Open Woodland**

## Appendix 1 Photos of survey sites



**Site 7B1 Open Woodland**



**Site 7B2 Open Woodland**

## Appendix 1 Photos of survey sites



**Site 7C1 Woodland**



**Site 7C2 Open Woodland**

## Appendix 1 Photos of survey sites

### Moyle Survey Sites



**Site 6A1 Open Forest**



**Site 6A2 Open Forest**

## Appendix 1 Photos of survey sites



**Site 6B1 Open Woodland**



**Site 6B2 Open Woodland**

## Appendix 1 Photos of survey sites



**Site 6C1 Open Woodland**



**Site 6C2 ST**

## Appendix 1 Photos of survey sites

### Chambers River Survey Sites



**Site 4A1 Open Forest**



**Site 4A2 Woodland (Eastern view)**

## Appendix 1 Photos of survey sites



**Site 4B1 Open Forest**



**Site 4B2 Woodland**

## Appendix 1 Photos of survey sites



**Site 4C1 Woodland**



**Site 4C2 Woodland**

## Appendix 1 Photos of survey sites

### Chainman and Chinaman Creek Survey Sites



**Site 3A1 Open Woodland**



**Site 3A2 Open Woodland**

## Appendix 1 Photos of survey sites



**Site 3B1 Open Woodland**



**Site 3B2 Tall Open Woodland**

## Appendix 1 Photos of survey sites



**Site 3C1 Open Woodland**



**Site 3C2 Open Woodland**

## Appendix 1 Photos of survey sites

### Latram River Survey Sites



**Site 1A1 Woodland**



**Site 1A2 Woodland**

## Appendix 1 Photos of survey sites



**Site 1B1 Woodland**



**Site 1B2 Open Forest**

## Appendix 1 Photos of survey sites



**Site 1C1 Closed Forest**



**Site 1C2 Open Forest**

## Appendix 1 Photos of survey sites

### Goromuru Survey Sites



**Site 2A1 Open Forest**



**Site 2A2 Open Forest**

## Appendix 1 Photos of survey sites



**Site 2B1 Open Forest**



**Site 2B2 Scattered Trees**

## Appendix 1 Photos of survey sites



**Site 2C1 Open Forest**



**Site 2C2 Open Forest**

## **Appendix 2**

**List of vertebrate fauna species recorded along the pipeline route and surrounding region.**

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Family	Common Name	Scientific Name	Moyle	Chambers River	Chainman and Chinaman	Dorisvale	Latram River	Gurrumuru	NT Fauna Atlas	EPBC Act Protected	Chatto Reports	VB1	DAB	GFU1	CA1	ARC3
<b>AMPHIBIANS</b>																
Bufo	Cane Toad	<i>Bufo marinus</i>		✓	✓	✓	✓	✓								
Hyla	Giant Frog	<i>Cyclorana australis</i>							✓				✓	✓		✓
Hyla	Long-footed Frog	<i>C. longipes</i>							✓				✓	✓	✓	
Hyla	Northern Dwarf Tree-frog	<i>Litoria bicolor</i>		✓			✓	✓	✓						✓	✓
Hyla	Green Tree Frog	<i>L. caerulea</i>		✓	✓				✓		✓	✓			✓	
Hyla	Copland's Rock Frog	<i>L. coplandi</i>		✓										✓	✓	
Hyla	Peter's Frog	<i>L. inermis</i>	✓	✓	✓				✓			✓	✓	✓	✓	
Hyla	Javelin Frog	<i>L. microbelos</i>							✓						✓	
Hyla	Rocket Frog	<i>L. nasuta</i>	✓	✓	✓		✓	✓	✓		✓				✓	✓
Hyla	Pale tree frog	<i>L. pallida</i>		✓					✓		✓				✓	
Hyla	Masked Rock-Frog	<i>L. personata</i>							✓							✓
Hyla	Roth's Tree Frog	<i>L. rothii</i>	✓				✓		✓				✓	✓	✓	✓
Hyla	Red tree frog	<i>L. rubella</i>		✓	✓			✓	✓		✓	✓			✓	✓
Hyla	Tornier's Frog	<i>L. tornieri</i>	✓	✓			✓	✓	✓				✓	✓	✓	✓
Hyla	Wotjulum frog	<i>L. wotjulumensis</i>	✓	✓	✓	✓	✓		✓		✓			✓	✓	✓
Myobatrachidae		<i>Crinia sp.</i>						✓								
Myobatrachidae	Bilingual Froglet	<i>Crinia bilingua</i>							✓						✓	
Myobatrachidae		<i>C. remota</i>	✓	✓												

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Myobatrachidae	Marbled frog	<i>Limnodynastes convexiusculus</i>	✓				✓		✓			✓			✓	
Myobatrachidae	Ornate Burrowing Frog	<i>L. ornatus</i>	✓	✓	✓		✓		✓			✓			✓	✓
Myobatrachidae	Carpenter Frog	<i>Megistolotis lignarius</i>							✓						✓	
Myobatrachidae	Northern Spadefoot Toad	<i>Notaden melanoscaphus</i>		✓					✓				✓		✓	
Myobatrachidae	Floodplain Toadlet	<i>Uperoleia inundata</i>							✓			✓			✓	✓
Myobatrachidae	Stonemason Toadlet	<i>U. lithomoda</i>	✓	✓	✓		✓	✓	✓				✓			
Ranadidae	Water Frog	<i>Rana daemeli</i>							✓							✓
REPTILES																
Agamidae	Friiled Lizard	<i>Chlamydosaurus kingii</i>							✓							✓
Agamidae		<i>Diporiphora albilabris sobria</i>	✓	✓					✓			✓		✓		
Agamidae		<i>D. arnhemica</i>	✓													
Agamidae		<i>D. bennettii</i>							✓						✓	
Agamidae	Two-lined Dragon	<i>D. bilineata</i>	✓	✓	✓	✓		✓	✓				✓		✓	✓
Agamidae		<i>D. magna</i>			✓				✓			✓			✓	
Agamidae	Gilbert's Dragon	<i>Lophognathus gilberti</i>	✓	✓	✓	✓	✓		✓				✓	✓	✓	✓
Agamidae	Northern Water Dragon	<i>L. temporalis</i>							✓			✓				✓
Boidae	Children's Python	<i>Antaresia childreni</i>		✓					✓				✓			
Boidae	Water Python	<i>Liasis mackloti</i>						✓	✓							✓

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Boidae	Carpet Python	<i>Morelia spilota</i>														✓
Chelidae	Northern Snake-necked Turtle	<i>Chelodina rugosa</i>							✓						✓	
Chelidae	Northern Snapping Turtle	<i>Elseya dentata</i>							✓				✓			
Chelidae	Red-faced Turtle	<i>Emydura victoriae</i>							✓				✓			
Colubridae	Brown Tree Snake	<i>Boiga irregularis</i>							✓				✓			✓
Colubridae	Bockadam	<i>Cerberus australis</i>							✓						✓	
Colubridae	Green/Common Tree Snake	<i>Dendrelaphis punctulata</i>						✓								
Colubridae	White-bellied Mangrove Snake	<i>Fordonia leucobalia</i>														✓
Colubridae	Keelback/Freshwater Snake	<i>Tropidonophis mairii</i>		✓				✓	✓						✓	
Crocodylidae	Freshwater Crocodile	<i>Crocodylus johnstonii</i>							✓	✓		✓		✓	✓	
Crocodylidae	Saltwater Crocodile	<i>C. porosus</i>							✓	✓					✓	✓
Elapidae	Northern Death Adder	<i>Acanthophis praelongus</i>														✓
Elapidae	Northern Shovel-nosed Snake	<i>Brachyuropsis roperi</i>		✓												
Elapidae	Black Whip Snake	<i>Demansia atra</i>							✓				✓		✓	✓
Elapidae	Papuan Whip Snake	<i>D. papuensis</i>							✓						✓	
Elapidae	Orange-naped Snake	<i>Furina ornata</i>							✓				✓			✓
Elapidae	King Brown	<i>Pseudechis australis</i>							✓				✓			✓
Elapidae	Western Brown Snake	<i>Pseudonaja nuchalis</i>							✓							✓
Elapidae	Northern Small-eyed Snake	<i>Rhinoplocephalus pallidiceps</i>		✓												

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Elapidae	Northern Desert Banded Snake	<i>Simoselaps anomalus</i>							✓				✓			
Gekkonidae		<i>Diplodactylus conspicillatus</i>			✓											
Gekkonidae	Crowned Gecko	<i>D. stenodactylus</i>							✓			✓				
Gekkonidae	House Gecko	<i>Gehyra australis</i>	✓	✓	✓	✓		✓	✓			✓	✓		✓	✓
Gekkonidae		<i>G. nana</i>	✓		✓				✓						✓	
Gekkonidae		<i>G. pamela</i>	✓													
Gekkonidae	Bynoe's Gecko	<i>Heteronotia binoei</i>	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓
Gekkonidae	Marbled Velvet Gecko	<i>Oedura marmorata</i>					✓		✓			✓	✓		✓	✓
Gekkonidae	Zig-zag Gecko	<i>O. rhombifer</i>		✓			✓	✓	✓			✓			✓	✓
Gekkonidae	Northern Spiny-tailed Gecko	<i>Strophurus ciliaris</i>	✓	✓	✓				✓				✓			
Pygopodidae	Burton's legless lizard	<i>Lialis burtonis</i>							✓				✓	✓		
Pygopodidae	Hooded Scaly Foot	<i>Pygopus nigriceps</i>							✓				✓			
Scincidae	Two-spined Rainbow Skink	<i>Carlia amax</i>	✓	✓	✓	✓	✓		✓							✓
Scincidae	Slender Rainbow Skink	<i>C. gracilis</i>	✓			✓		✓	✓			✓	✓			
Scincidae	Robust Rainbow Skink	<i>C. longipes</i>					✓	✓	✓						✓	
Scincidae	Striped Rainbow Skink	<i>C. munda</i>	✓	✓	✓		✓	✓	✓			✓		✓	✓	✓
Scincidae	Three-spined Rainbow Skink	<i>C. triacantha</i>	✓		✓				✓			✓	✓		✓	
Scincidae		<i>Ctenotus decaneurus</i>		✓												
Scincidae	Port-Essington Ctenotus	<i>C. essingtonii</i>	✓				✓	✓	✓							✓
Scincidae		<i>C. hilli</i>		✓	✓			✓								
Scincidae	Plain Ctenotus	<i>C. inornatus</i>		✓		✓			✓			✓			✓	✓

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Scincidae	MacFarlane's Lerista	<i>C. macfarlani</i>					✓		✓							✓
Scincidae	Leopard Ctenotus	<i>C. pantherinus</i>			✓				✓			✓	✓			
Scincidae	Robust Ctenotus	<i>C. robustus</i>							✓				✓			✓
Scincidae	Spalding's Ctenotus	<i>C. spaldingi</i>		✓	✓				✓			✓	✓	✓	✓	
Scincidae	Dwarf Ctenotus	<i>C. tantillus</i>							✓			✓	✓			
Scincidae	Scant-striped Ctenotus	<i>C. vertebralis</i>		✓					✓				✓		✓	
Scincidae	Aboreal Snake-eyed Skink	<i>Cryptoblepharus plagiocephalus</i>	✓	✓	✓	✓	✓	✓	✓			✓	✓		✓	✓
Scincidae	Stout-tailed Skink	<i>Glaphyromorphus crassicaudus</i>							✓							✓
Scincidae		<i>G. douglasi</i>							✓						✓	
Scincidae	Smooth-tailed Skink	<i>G. isolepis</i>							✓			✓	✓		✓	✓
Scincidae	Dark-tailed Skink	<i>G. nigricaudis</i>					✓		✓							✓
Scincidae	Griffin's Lerista	<i>Lerista griffini</i>							✓				✓			
Scincidae	Karl Schmidt's Lerista	<i>L. karlschmidti</i>							✓						✓	
Scincidae	Eastern Lerista	<i>L. orientalis</i>							✓			✓				
Scincidae	Single-toed Larista	<i>L. stylis</i>							✓							✓
Scincidae	Grey's Menetia	<i>Menetia greyii</i>	✓						✓			✓	✓			
Scincidae	Main's Menetia	<i>M. maini</i>							✓					✓		
Scincidae		<i>Menetia sp.</i>		✓												
Scincidae	Red-tailed Snake-eyed Skink	<i>Morethia ruficauda</i>	✓						✓			✓			✓	
Scincidae	Storr's Snake-eyed Skink	<i>M. storri</i>		✓		✓			✓			✓	✓		✓	✓
Scincidae	Ornate Snake-eyed Skink	<i>Notoscincus ornatus</i>	✓			✓			✓			✓			✓	
Scincidae	Slender Snake-eyed Skink	<i>Proablepharus tenuis</i>			✓				✓			✓	✓			

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Scincidae	Common Blue-tongue Lizard	<i>Tiliqua scincoides</i>							✓				✓			
Typhlopidae		<i>Ramphotyphlops broomi</i>														✓
Typhlopidae		<i>R. ligatus</i>							✓				✓			
Typhlopidae		<i>R. wiedii</i>							✓							✓
Typhlopidae		<i>R. yirrikalae</i>														✓
Varanidae	Ridge-tailed Monitor	<i>Varanus acanthurus</i>							✓				✓			
Varanidae	Sand Goanna	<i>V. gouldii</i>	✓						✓			✓	✓			✓
Varanidae	Merten's Water Monitor	<i>V. mertensi</i>	✓						✓						✓	
Varanidae		<i>V. primordius</i>		✓												
Varanidae	Spotted Tree Monitor	<i>V. scalaris</i>	✓				✓	✓	✓			✓			✓	✓
Varanidae		<i>V. tristis</i>							✓				✓			
Varanidae		<i>Varanus sp.</i>					✓									
BIRDS																
Accipitridae	Collared Sparrowhawk	<i>Accipiter cirrhocephalus</i>			✓				✓							✓
Accipitridae	Brown Goshawk	<i>A. fasciatus</i>	✓					✓	✓			✓	✓	✓	✓	✓
Accipitridae	Wedge-tailed Eagle	<i>Aquila audax</i>		✓	✓	✓			✓			✓	✓	✓		✓
Accipitridae	Pacific Baza	<i>Aviceda subcristata</i>							✓			✓				
Accipitridae	Spotted Harrier	<i>Circus assimilis</i>							✓					✓		
Accipitridae	Black-shouldered Kite	<i>Elanus axillaris</i>							✓							✓
Accipitridae	Red Goshawk	<i>Erythrotriorchis radiatus</i>							✓	✓						✓

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Accipitridae	White-bellied Sea Eagle	<i>Haliaeetus leucogaster</i>						✓	✓	✓		✓				✓
Accipitridae	Brahminy Kite	<i>Haliastur indus</i>							✓							✓
Accipitridae	Whistling Kite	<i>H. spheonurus</i>	✓	✓		✓		✓	✓			✓	✓	✓	✓	✓
Accipitridae	Black-breasted Buzzard	<i>Hamirostra melanosternon</i>						✓	✓					✓		
Accipitridae	Square Tailed Kite	<i>Lophoictinia isura</i>							✓					✓		
Accipitridae	Black Kite	<i>Milvus migrans</i>		✓	✓				✓			✓	✓	✓	✓	✓
Accipitridae	Osprey	<i>Pandion haliaetus</i>							✓							✓
Aegothelidae	Australian Owlet-nightjar	<i>Aegotheles cristatus</i>	✓		✓		✓		✓			✓				✓
Alaudidae	Singing Bushlark	<i>Mirafra javanica</i>							✓			✓	✓			
Alcedinidae	Azure Kingfisher	<i>Ceyx azurea</i>			✓		✓	✓	✓			✓		✓	✓	✓
Alcedinidae	Little Kingfisher	<i>Alcedo pusilla</i>							✓							✓
Anatidae	Grey Teal	<i>Anas gracilis</i>							✓			✓	✓	✓		
Anatidae	Pacific Black Duck	<i>A. superciliosa</i>							✓			✓	✓	✓		
Anatidae	Wandering Whistling-Duck	<i>Dendrocygna arcuata</i>						✓	✓			✓		✓		✓
Anatidae	Plumed Whistling Duck	<i>D. eytoni</i>							✓							✓
Anatidae	Green Pygmy Goose	<i>Nettapus pulchellus</i>							✓			✓			✓	✓
Anatidae	Radjah Shellduck	<i>Tadorna radjah</i>							✓				✓	✓	✓	
Anhingidae	Darter	<i>Anhinga melanogaster</i>	✓					✓	✓			✓		✓	✓	✓
Anseranatidae	Magpie Goose	<i>Anseranas semipalmata</i>						✓	✓			✓				✓
Apodidae	Fork-tailed Swift	<i>Apus pacificus</i>							✓				✓			
Ardeidae	Great Egret	<i>Ardea alba</i>							✓			✓	✓	✓	✓	✓
Ardeidae	Intermediate Egret	<i>A. intermedia</i>							✓			✓			✓	✓
Ardeidae	White-necked Heron	<i>A. pacifica</i>		✓		✓			✓				✓	✓	✓	✓

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Ardeidae	Pied Heron	<i>A. picata</i>							✓			✓		✓		
Ardeidae	Little Egret	<i>Egretta garzetta</i>							✓			✓	✓	✓	✓	✓
Ardeidae	White-Faced Heron	<i>E. novaehollandiae</i>							✓					✓	✓	✓
Ardeidae	Eastern Reef Egret	<i>E. sacra</i>							✓							✓
Ardeidae	Black Bittern	<i>Ixobrychus flavicollis</i>							✓			✓	✓		✓	✓
Ardeidae	Nankeen Night Heron	<i>Nycticorax caledonicus</i>	✓						✓			✓	✓	✓	✓	✓
Artamidae	Black-faced Woodswallow	<i>Artamus cinereus</i>		✓	✓			✓	✓			✓	✓	✓	✓	
Artamidae	White-breasted Woodswallow	<i>A. leucorhynchus</i>	✓				✓	✓	✓					✓	✓	
Artamidae	Little woodswallow	<i>A. minor</i>	✓						✓			✓	✓	✓	✓	
Artamidae	Masked woodswallow	<i>A. personatus</i>							✓				✓		✓	
Artamidae	Pied Butcher Bird	<i>Cracticus nigrogularis</i>	✓		✓	✓	✓	✓	✓			✓	✓	✓	✓	✓
Artamidae	Grey Butcher Bird	<i>C. torquatus leucopterus</i>							✓			✓	✓		✓	
Artamidae	Australian Magpie	<i>Gymnorhina tibicen</i>				✓			✓			✓		✓	✓	
Burhinidae	Bush-stone Curlew	<i>Burhinus grallarius</i>				✓			✓			✓			✓	
Burhinidae	Beach-stone Curlew	<i>Esacus neglectus</i>						✓								
Cacatuidae	Sulfur Crested Cockatoo	<i>Cacatua galerita</i>		✓		✓	✓	✓	✓			✓	✓	✓	✓	✓
Cacatuidae	Galah	<i>C. roseicapilla</i>		✓	✓	✓			✓			✓	✓	✓	✓	
Cacatuidae	Little Corella	<i>C. sanguinea</i>							✓			✓			✓	✓
Cacatuidae	Red-tailed Black Cockatoo	<i>Calyptorhynchus banksii</i>	✓	✓	✓	✓			✓			✓	✓	✓	✓	✓
Cacatuidae	Cockatiel	<i>Nymphicus hollandicus</i>		✓	✓				✓				✓	✓	✓	
Campephagidae	Black-faced Cuckoo	<i>Coracina</i>	✓	✓	✓	✓			✓			✓	✓	✓	✓	✓

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	Shrike	<i>novaehollandiae</i>														
Campephagidae	White Bellied Cuckoo Shrike	<i>C. papuensis</i>	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓
Campephagidae	Cicadabird	<i>C. tenuirostris</i>							✓	✓		✓				✓
Campephagidae	Spotted Nightjar	<i>Eurostopodus argus</i>						✓								
Campephagidae	Varied Triller	<i>Grallina cyanoleuca</i>		✓					✓			✓				✓
Campephagidae	White-winged Triller	<i>Lalage sueurii</i>		✓	✓				✓			✓	✓	✓	✓	
Caprimulgidae	Large-tailed Nightjar	<i>Caprimulgus macrurus</i>							✓							✓
Casuariidae	Emu	<i>Dromaius novaehollandiae</i>							✓				✓			✓
Centropodidae	Pheasant Coucal	<i>Centropus phasianinus</i>				✓		✓	✓			✓	✓	✓	✓	✓
Charadriidae	Greater Sand Plover	<i>Charadrius leschenaultii</i>							✓							✓
Charadriidae	Oriental Plover	<i>C. veredus</i>								✓						
Charadriidae	Black-fronted Dotterel	<i>Elsayornis melanops</i>							✓			✓		✓		
Charadriidae	Red-kneed Dottrel	<i>Erythrogonys cinctus</i>							✓			✓				
Charadriidae	Masked Lapwing	<i>Vanellus miles miles</i>							✓			✓		✓		✓
Ciconiidae	Black-necked stork	<i>Ephippiorhynchus asiaticus</i>			✓				✓			✓	✓	✓		✓
Climacteridae	Black-tailed Treecreeper	<i>Climacteris melanura</i>			✓			✓					✓	✓	✓	
Columbidae	Rock Dove (feral pigeon)	<i>Columba livia</i>							✓							✓
Columbidae	Pied Imperial Pigeon	<i>Ducula bicolor</i>							✓			✓			✓	✓
Columbidae	Diamond Dove	<i>Geopelia cuneata</i>	✓	✓					✓				✓	✓	✓	✓
Columbidae	Bar-shouldered Dove	<i>G. humeralis</i>	✓		✓	✓	✓	✓	✓			✓	✓	✓	✓	✓
Columbidae	Peaceful Dove	<i>G. striata</i>	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓

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Family	Common Name	Scientific Name	Moyle	Chambers River	Chainman and Chinaman	Dorisvale	Latram River	Gurrunuru	NT Fauna Atlas	EPBC Act Protected	Chatto Reports	VBI	DAB	GFU1	CA1	ARC3
Columbidae	Partridge Pigeon	<i>Geophaps smithii smithii</i>								✓						
Columbidae	Crested Pigeon	<i>Ocyrops lophotes</i>							✓				✓	✓		
Columbidae	Common Bronzewing	<i>Phaps chalcoptera</i>		✓		✓			✓				✓	✓		✓
Columbidae	Rose-crowned Fruit Dove	<i>Ptilinopus regina</i>							✓							✓
Coraciidae	Dollarbird	<i>Eurystomus orientalis</i>							✓			✓	✓	✓	✓	✓
Corcoraciidae	Apostle Bird	<i>Struthidea cinerea</i>			✓				✓				✓	✓		
Corvidae	Torresian Crow	<i>Corvus orru</i>	✓	✓	✓	✓		✓	✓			✓	✓	✓	✓	
Cuculidae	Brush Cuckoo	<i>Cacomantis variolosus</i>			✓	✓			✓			✓	✓	✓	✓	✓
Cuculidae	Horsfield's Bronze Cuckoo	<i>Chrysococcyx basalus</i>			✓				✓				✓			✓
Cuculidae	Little Bronze Cuckoo	<i>C. minutillus</i>							✓			✓				✓
Cuculidae	Pallid Cuckoo	<i>Cuculus pallidus</i>			✓				✓					✓		✓
Cuculidae	Common Koel	<i>Eudynamis scolopacea</i>							✓			✓	✓	✓		✓
Cuculidae	Channel Billed Cuckoo	<i>Scythrops novaehollandiae</i>							✓			✓		✓		
Dicaeidae	Mistletoebird	<i>Dicaeum hirundinaceum</i>	✓		✓	✓	✓	✓	✓			✓	✓	✓	✓	✓
Dicruridae	Spangled Drongo	<i>Dicrurus bracteatus</i>	✓				✓	✓	✓			✓			✓	
Dicruridae	Magpie Lark	<i>Grallina cyanoleuca</i>			✓	✓			✓			✓	✓	✓	✓	✓
Dicruridae	Shining Flycatcher	<i>Myiagra alecto</i>	✓					✓	✓			✓		✓	✓	✓
Dicruridae	Restless Flycatcher	<i>M. inquieta</i>		✓	✓	✓			✓			✓	✓	✓	✓	
Dicruridae	Leaden flycatcher	<i>M. rubecula</i>		✓	✓		✓	✓	✓			✓	✓	✓	✓	✓
Dicruridae	Broad-billed Flycatcher	<i>M. ruficollis</i>							✓							✓
Dicruridae	Grey Fantail	<i>Rhipidura fuliginosa</i>							✓					✓		

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Dicruridae	Willie Wagtail	<i>R. leucophrys</i>	✓	✓	✓	✓		✓	✓			✓	✓	✓	✓	✓
Dicruridae	Rufous Fantail	<i>R. rufifrons</i>					✓		✓	✓		✓			✓	✓
Dicruridae	Northern Fantail	<i>R. rufiventris</i>	✓			✓	✓	✓	✓			✓	✓	✓	✓	✓
Falconidae	Brown Falcon	<i>Falco berigora</i>		✓					✓			✓		✓	✓	✓
Falconidae	Nankeen Kestrel	<i>F. cenchroides</i>		✓					✓					✓		
Glareolidae	Oriental Pratincole	<i>Glareola maldivarum</i>								✓						
Glareolidae	Australian Pratincole	<i>Stiltia isabella</i>							✓			✓	✓		✓	
Gruidae	Brolga	<i>Grus rubicunda</i>							✓			✓		✓		
Halcyonidae	Blue-winged Kookaburra	<i>Dacelo leachii</i>	✓	✓			✓	✓	✓			✓	✓	✓	✓	✓
Halcyonidae	Collared Kingfisher	<i>Todiramphus chloris</i>							✓							✓
Halcyonidae	Forest Kingfisher	<i>T. macleayii</i>					✓	✓	✓				✓	✓	✓	✓
Halcyonidae	Red-backed Kingfisher	<i>T. pyrrhopygia</i>			✓				✓			✓	✓	✓		
Halcyonidae	Sacred Kingfisher	<i>T. sanctus</i>						✓	✓			✓	✓	✓	✓	
Hirundinidae	Fairy Martin	<i>Hirundo ariel</i>							✓						✓	
Hirundinidae	Tree Martin	<i>H. nigricans</i>	✓						✓			✓		✓	✓	✓
Hirundinidae	Barn Swallow	<i>H. rustica</i>								✓						
Jacanidae	Comb-crested Jacana	<i>Irediparra gallinacea</i>							✓							✓
Laridae	Silver Gull	<i>Larus novaehollandiae</i>							✓							✓
Laridae	Lesser Crested Tern	<i>Sterna bengalensis</i>							✓							✓
Laridae	Crested Tern	<i>S. bergii</i>							✓							✓
Laridae	Caspian Tern	<i>S. caspia</i>							✓							✓
Laridae	Black-naped Tern	<i>S. sumatrana</i>							✓							✓
Maluridae	Red-backed Fairy Wren	<i>Malurus melanocephalus</i>	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓
Megapodiidae	Orange-footed Scrubfowl	<i>Megapodius reinwardt</i>					✓		✓			✓				✓

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Meliphagidae	Banded Honeyeater	<i>Certhionyx pectoralis</i>		✓					✓				✓	✓	✓	✓
Meliphagidae	Rufous-banded Honeyeater	<i>Conopophila albogularis</i>		✓				✓	✓			✓				
Meliphagidae	Rufous throated honeyeater	<i>C. rufogularis</i>		✓				✓	✓			✓	✓	✓	✓	
Meliphagidae	Blue-faced Honeyeater	<i>Entomyzon cyanotis</i>	✓	✓		✓			✓			✓	✓	✓	✓	
Meliphagidae	Yellow-tinted honeyeater	<i>Lichenostomus flavescens</i>			✓				✓			✓	✓	✓	✓	
Meliphagidae	White-gaped honeyeater	<i>L. unicolor</i>	✓	✓		✓		✓	✓			✓	✓	✓	✓	✓
Meliphagidae	Singing Honeyeater	<i>L. virescens</i>							✓					✓		
Meliphagidae	Brown honeyeater	<i>Lichmera indistincta</i>	✓	✓			✓	✓	✓			✓	✓	✓	✓	✓
Meliphagidae	Yellow-throated Miner	<i>Manorina flavigula</i>				✓	✓	✓	✓			✓				✓
Meliphagidae	White-throated Honeyeater	<i>Melithreptus albogularis</i>	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓
Meliphagidae	Black-chinned Honeyeater	<i>M. gularis</i>							✓				✓		✓	
Meliphagidae	Red-headed Honeyeater	<i>Myzomela erythrocephala</i>							✓							✓
Meliphagidae	Dusky Honeyeater	<i>M. obscura</i>	✓				✓	✓	✓			✓	✓	✓	✓	✓
Meliphagidae	Silver-crowned friarbird	<i>Philemon argenticeps</i>	✓				✓	✓	✓			✓	✓	✓	✓	✓
Meliphagidae	Helmeted Friarbird	<i>P. buceroides</i>	✓	✓					✓			✓				✓
Meliphagidae	Little friar bird	<i>P. citreogularis</i>					✓		✓			✓	✓	✓	✓	✓
Meliphagidae	Bar-breasted Honeyeater	<i>Ramsayornis fasciatus</i>						✓	✓			✓		✓	✓	
Meliphagidae	White-streaked Honeyeater	<i>Trichodere cockerelli</i>							✓							✓
Meliphagidae	Tawny-breasted	<i>Xanthotis flaviventer</i>					✓									

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	Honeyeater															
Meropidae	Rainbow bee-eater	<i>Merops ornatus</i>	✓	✓	✓		✓	✓	✓			✓	✓	✓	✓	✓
Motacilidae	Richard's Pipet	<i>Anthus novaeseelandiae</i>							✓			✓		✓		
Neosittidae	Varied Sittella	<i>Daphoenositta chrysoptera leucoptera</i>		✓	✓	✓			✓				✓	✓	✓	
Oriolidae	Yellow Oriole	<i>Oriolus flavocinctus</i>						✓	✓			✓			✓	✓
Oriolidae	Olive-backed Oriole	<i>O. sagittatus</i>							✓					✓	✓	✓
Oriolidae	Australasian Figbird	<i>Sphecotheres viridis</i>		✓					✓				✓		✓	✓
Otididae	Australian Bustard	<i>Ardeotis australis</i>							✓			✓		✓		
Pachycephalidae	Grey Shrike Thrush	<i>Colluricincla harmonica</i>							✓			✓	✓	✓		✓
Pachycephalidae	Little Shrike Thrush	<i>C. megarhyncha</i>			✓				✓						✓	✓
Pachycephalidae	Crested Shrike-tit	<i>Falcunculus frontatus whitei</i>								✓						
Pachycephalidae	Rufous Whistler	<i>Pachycephala rufivenris</i>	✓	✓	✓		✓	✓	✓			✓	✓	✓	✓	✓
Pachycephalidae	Grey Whistler	<i>P. simplex</i>					✓		✓							✓
Pardalotidae	Green-backed Gerygone	<i>Gerygone chloronotus</i>							✓			✓		✓		✓
Pardalotidae	Mangrove Gerygone	<i>G. levigaster</i>							✓							✓
Pardalotidae	Large-billed Gerygone	<i>G. magnirostris</i>	✓					✓								
Pardalotidae	White-throated Gerygone	<i>G. olivacea</i>					✓	✓	✓				✓	✓	✓	
Pardalotidae	Red-browed Pardalote	<i>Pardalotus rubricatus</i>							✓				✓			
Pardalotidae	Striated Pardalote	<i>P. striatus</i>	✓	✓	✓	✓	✓		✓			✓	✓	✓	✓	
Pardalotidae	Weebill	<i>Smicrornis brevirostris</i>	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓
Passeridae	Gouldian Finch	<i>Erythrura gouldiae</i>		✓					✓	✓				✓		

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Passeridae	Chestnut-breasted Mannikin	<i>Lonchura castaneothorax</i>						✓	✓						✓	
Passeridae	Yellow-rumped Mannikin	<i>L. flaviprymna</i>						✓								
Passeridae	Crimson Finch	<i>Neochmia phaeton</i>	✓	✓				✓	✓			✓		✓	✓	
Passeridae	Long-tailed Finch	<i>Poephila acuticauda</i>		✓		✓			✓			✓	✓	✓	✓	
Passeridae	Masked Finch	<i>P. personata</i>		✓	✓				✓			✓	✓	✓	✓	✓
Passeridae	Double-barred finch	<i>Taeniopygia bichenovii</i>	✓	✓	✓			✓	✓			✓	✓	✓	✓	✓
Pelecanidae	Australian Pelican	<i>Pelecanus conspicillatus</i>							✓			✓		✓		
Petroicidae	Hooded Robin	<i>Melanodryas cucullata</i>							✓				✓	✓		
Petroicidae	Jacky Winter	<i>Microeca fascinans</i>		✓	✓				✓			✓		✓	✓	
Petroicidae	Lemon-bellied Flycatcher	<i>M. flavigaster</i>	✓					✓	✓			✓		✓	✓	✓
Petroicidae	White-browed Robin	<i>Poecilodryas superciliosa</i>							✓	✓				✓		
Phalacrocoracidae	Great Cormorant	<i>Phalacrocorax carbo</i>							✓					✓	✓	
Phalacrocoracidae	Little Pied Cormorant	<i>P. melanoleucos</i>							✓			✓	✓	✓	✓	✓
Phalacrocoracidae	Little Black Cormorant	<i>P. sulcirostris</i>							✓			✓		✓		✓
Phalacrocoracidae	Pied Cormorant	<i>P. varius</i>							✓					✓	✓	
Phasianidae	King Quail	<i>Coturnix chinensis</i>							✓						✓	
Phasianidae	Brown Quail	<i>C. ypsilophora</i>	✓	✓	✓	✓		✓	✓				✓		✓	
Pittidae	Rainbow Pitta	<i>Pitta iris</i>							✓							✓
Podargidae	Tawny Frogmouth	<i>Podargus strigoides</i>		✓	✓	✓			✓			✓	✓		✓	✓
Podicipedidae	Australasian Grebe	<i>Tachybaptus novaehollandiae</i>							✓				✓		✓	
Pomatostomidae	Grey-crowned babbler	<i>Pomatostomus temporalis</i>		✓	✓	✓			✓			✓	✓	✓	✓	✓

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Psittacidae	Red-winged Parrot	<i>Aprosmictus erythropterus</i>	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓
Psittacidae	Northern Rosella	<i>Platycercus venustus</i>			✓	✓	✓		✓			✓		✓		✓
Psittacidae	Hooded Parrot	<i>Psephotus dissimilis</i>		✓	✓				✓				✓	✓		✓
Psittacidae	Varied Lorikeet	<i>Psitteuteles versicolor</i>			✓		✓	✓	✓					✓		✓
Psittacidae	Rainbow Lorikeet	<i>Trichoglossus haematodus</i>	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓
Ptilonorhynchidae	Great Bowerbird	<i>Chlamydera nuchalis</i>		✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓
Rallidae	Bush Hen	<i>Amaurornis olivaceus</i>							✓							✓
Rallidae	Buff-banded Rail	<i>Gallirallus philippensis</i>							✓						✓	
Rallidae	Spotless Crake	<i>Porzana tabeensis</i>							✓						✓	
Recurvirostridae	Black-winged stilt	<i>Himantopus himantopus</i>							✓			✓		✓		
Scolopacidae	Common sandpiper	<i>Actitis hypoleucos</i>							✓			✓				
Scolopacidae	Red-necked Stint	<i>Calidris ruficollis</i>							✓							✓
Scolopacidae	Great Knot	<i>C. tenuirostris</i>							✓	✓						✓
Scolopacidae	Black-tailed Godwit	<i>Limosa limosa</i>								✓						
Scolopacidae	Eastern Curlew	<i>Numenius madagascariensis</i>							✓							✓
Scolopacidae	Little Curlew	<i>N. minutus</i>							✓	✓						✓
Scolopacidae	Common Greenshank	<i>Tringa nebularia</i>							✓			✓				
Scolopacidae	Terek Sandpiper	<i>Xenus cinereus</i>							✓							✓
Strigidae	Barking Owl	<i>Ninox connivens</i>							✓			✓				
Strigidae	Southern Boobook	<i>N. novaeseelandiae</i>					✓	✓	✓			✓	✓	✓		✓
Sylviidae	Rufous Songlark	<i>Cincloramphus</i>							✓					✓	✓	✓

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		<i>mathewsi</i>														
Sylviidae	Golden Headed Cisticola	<i>Cisticola exilis</i>	✓		✓	✓		✓	✓					✓	✓	✓
Sylviidae	Tawny Grassbird	<i>Megalurus timoriensis</i>				✓		✓	✓						✓	
Threskiornithidae	Yellow-billed Spoonbill	<i>Platalea flavipes</i>							✓					✓		
Threskiornithidae	Royal Spoonbill	<i>P. regia</i>							✓			✓	✓	✓		✓
Threskiornithidae	Glossy Ibis	<i>Plegadis falcinellus</i>							✓			✓		✓		
Threskiornithidae	Australian White Ibis	<i>Threskiornis molucca</i>							✓			✓		✓		✓
Threskiornithidae	Straw-necked Ibis	<i>T. spinicollis</i>							✓			✓	✓	✓	✓	
Turnicidae	Red-backed Button Quail	<i>Turnix maculosa</i>							✓						✓	
Tytonidae	Barn Owl	<i>Tyto alba</i>							✓					✓		
Tytonidae	Masked Owl	<i>T. novaehollandiae kimberli</i>								✓						
Zosteropidae	Yellow white-eye	<i>Zosterops luteus</i>							✓							✓
<b>MAMMALS</b>																
Bovidae	Water Buffalo	<i>Bubalus bubalis</i>					✓	✓								
Canidae	Dingo	<i>Canis lupus dingo</i>				✓		✓	✓			✓			✓	
Dasyuridae	Fawn Antechinus	<i>Antechinus bellus</i>							✓							✓
Dasyuridae	Northern Quoll	<i>Dasyurus hallucatus</i>	✓						✓				✓			
Dasyuridae	Common Plantigale	<i>Planigale maculata</i>		✓					✓				✓			
Dasyuridae	Dunnart	<i>Smithopsis bindi</i>		✓		✓										
Dasyuridae	Red-cheeked Dunnart	<i>S. virginiae</i>	✓			✓		✓	✓						✓	
Emballonuridae	Yellow-Bellied Sheath-tail Bat	<i>Saccolaimus flaviventris</i>							✓			✓				✓

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Emballonuridae	Bare-rumped Sheath-tail Bat	<i>S. saccolaimus nudicluniatus</i>								✓						
Emballonuridae	Common Sheath-tailed Bat	<i>Taphozous georgianus</i>							✓			✓				✓
Equidae	Donkey	<i>Equus asinus</i>			✓											
Felidae	Feral Cat	<i>Felis catus</i>							✓						✓	
Hipposideridae	Dusky leaf-nosed Bat	<i>Hipposideros ater</i>							✓				✓			
Hipposideridae	Orange Leaf-nosed Bat	<i>Rhinonicteris aurantius</i>							✓				✓			
Macropodidae	Spectacled Hare-wallaby	<i>Lagorchestes conspicillatus</i>							✓						✓	
Macropodidae	Agile Wallaby	<i>Macropus agilis</i>	✓	✓	✓		✓	✓	✓				✓		✓	✓
Macropodidae	Antilopine Wallaroo	<i>M. antilopinus</i>							✓			✓				✓
Macropodidae	Black Wallaroo	<i>M. bernardus</i>							✓							✓
Macropodidae	Wallaroo species (scats)	<i>Macropus sp.</i>						✓								
Macropodidae	Euro	<i>M. robustus</i>							✓				✓	✓		
Macropodidae	Northern Nail-tail Wallaby	<i>Onychogalea unguifera</i>							✓					✓		
Macropodidae	Short-eared Rock Wallaby	<i>Petrogale brachyotis</i>							✓				✓		✓	
Megadermatidae	Ghost Bat	<i>Macroderma gigas</i>							✓				✓			
Molossidae	Northern Free-tail Bat	<i>Chaerephon jobensis</i>							✓			✓				
Muridae	Water Rat	<i>Hydromys chrysogaster</i>						✓	✓						✓	
Muridae	Forrest's Mouse	<i>Leggadina forresti</i>							✓			✓				
Muridae	Grassland Melomys	<i>Melomys burtoni</i>	✓			✓	✓	✓	✓						✓	
Muridae	Black-footed Tree Rat	<i>Mesembriomys gouldii</i>							✓							✓
Muridae	House Mouse	<i>Mus musculus</i>					✓		✓							✓

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Muridae	Northern Hopping-mouse	<i>Notomys aquilo</i>								✓						
Muridae	Delicate Mouse	<i>Pseudomys delicatulus</i>	✓	✓					✓			✓				
Muridae	Western Chestnut Mouse	<i>P. nanus nanus</i>							✓			✓				
Muridae	Dusky Rat	<i>Rattus colletti</i>							✓						✓	
Muridae	Black Rat	<i>R. rattus</i>							✓							✓
Muridae	Pale Field Rat	<i>R. tunneyi</i>	✓			✓			✓			✓				
Muridae	Water Mouse	<i>Xeromys myoides</i>								✓						
Muridae	Common Rock Rat	<i>Zyromys argurus</i>	✓	✓	✓	✓			✓			✓				
Peramelidae	Northern Brown Bandicoot	<i>Isodon macrourus</i>		✓	✓				✓				✓		✓	
Petauridae	Sugar Glider	<i>Petaurus breviceps</i>							✓				✓			
Phalangeridae	Northern Brush-tail Possum	<i>Trichosurus vulpecula</i>							✓							✓
Pteropodidae	Northern Blossom Bat	<i>Macroglossus minimus</i>							✓							✓
Pteropodidae	Black Flying-fox	<i>Pteropus alecto</i>					✓	✓	✓						✓	
Pteropodidae	Little-red Flying Fox	<i>P. scapulatus</i>		✓					✓				✓		✓	
Suidae	Pig (feral)	<i>Sus scrofa</i>							✓						✓	
Tachyglossidae	Echidna	<i>Tachyglossus aculeatus</i>							✓						✓	✓
Vespertilionidae	Gould's Wattle Bat	<i>Chalinolobus gouldii</i>							✓				✓			
Vespertilionidae	Hoary Wattle Bat	<i>C. nigrogriseus</i>							✓						✓	
Vespertilionidae	Common Bent-wing Bat	<i>Miniopterus schreibersii</i>							✓				✓			
Vespertilionidae	Large-footed Myotis	<i>Myotis Leuconoe adversus</i>							✓				✓			
Vespertilionidae	Arnhem Long-eared Bat	<i>Nyctophilus arnhemensis</i>							✓							✓

## Appendix 2

### List of vertebrate fauna species recorded along the pipeline route and surrounding region.

Family	Common Name	Scientific Name	Moyle	Chambers River	Chainman and Chinaman	Dorisvale	Latram River	Gurrunuru	NT Fauna Atlas	EPBC Act Protected	Chatto Reports	VB1	DAB	GFU1	CA1	ARC3
Vespertilionidae	Eastern Long-eared Bat	<i>N. bifax</i>							✓						✓	
Vespertilionidae	Little Broad-nosed Bat	<i>Scotorepens greyii</i>							✓				✓	✓		
Vespertilionidae	Western Cave Eptesicus	<i>Vespadelus caurinus</i>							✓				✓			
Vespertilionidae	Eastern Forest Bat	<i>V. pumilus</i>							✓				✓			

VB1 – Victoria Bonaparte bioregion (sub-bioregion 1)

DAB – Daly Basin bioregion

GFU – Gulf Falls and Uplands bioregion

CA1 – Central Arnhem bioregion (sub-bioregion 1)

ARC3 – Arnhem Coastal bioregion (sub-bioregion 3)

**Appendix 3**  
**Results of Fauna Surveys from May to July 2004**

## Appendix 3 Fauna survey results

### Dorisvale Survey Site - Fauna

Family Name	Common name	Scientific name	7A1	7A2	7B1	7B2	7C1	7C2
			Total	Total	Total	Total	Total	Total
	<b>Frogs</b>							
BUFONIDAE	Cane Toad	<i>Bufo marinus</i>	1		10	15		
HYLIDAE	Wotjulum Frog	<i>Litoria wotjulumensis</i>			1			
	<b>Reptiles</b>							
AGAMIDAE	Two-lined dragon	<i>Diporiphora bilineata</i>	5		1		2	2
AGAMIDAE	Gilberts Dragon	<i>Lophognathus gilberti</i>	1		1			1
GEKKONIDAE	Gecko	<i>Gehyra australis</i>					1	
GEKKONIDAE	Prickly gecko	<i>Heteronotia binoei</i>	3					
SCINCIDAE	Skink	<i>Carlia amax</i>	4	5			4	
SCINCIDAE	Skink	<i>Carlia gracilis</i>			3	3		
SCINCIDAE	Skink	<i>Cryptoblepharus plagiocephalus</i>			2			2
SCINCIDAE	Skink	<i>Ctenotus inornatus</i>	1					
SCINCIDAE	Skink	<i>Ctenotus hilli</i>				1		
SCINCIDAE	Skink	<i>Morethia storri</i>			2			
SCINCIDAE	Skink	<i>Notoscincus ornatus</i>					2	1
	<b>Birds</b>							
ACCIPITRIDAE	Wedge-tailed Eagle	<i>Aquila audax</i>					1	
ACCIPITRIDAE	Whistling Kite	<i>Haliastur sphenurus</i>	1			2		1
ARDEIDAE	White-necked Heron	<i>Ardea pacifica</i>				1		
ARTAMIDAE	Pied Butcherbird	<i>Cracticus nigrogularis</i>	1	11			1	6
ARTAMIDAE	Australian Magpie	<i>Gymnorhina tibicen</i>				2		
BURHINIDAE	Bush Stone-curlew	<i>Burhinus grallarius</i>				1		
CACATUIDAE	Sulphur-crested Cockatoo	<i>Cacatua galerita</i>		1		2		
CACATUIDAE	Red-tailed Black-Cockatoo	<i>Calyptorhynchus banksii</i>						1
CACATUIDAE	Galah	<i>Eolophus roseicapilla</i>	51			36	53	
CAMPEPHAGIDAE	Black-faced Cuckoo-Shrike	<i>Coracina novaehollandiae</i>					1	
CAMPEPHAGIDAE	White-bellied Cuckoo-Shrike	<i>Coracina papuensis</i>	3	1	1		1	
CENTROPODIDAE	Pheasant Coucal	<i>Centropus phasianinus</i>				3		
COLUMBIDAE	Bar-shouldered Dove	<i>Geopelia humeralis</i>	1					
COLUMBIDAE	Peaceful Dove	<i>Geopelia striata</i>			1			1
COLUMBIDAE	Common Bronzewing	<i>Phaps chalcoptera</i>		3				
CORVIDAE	Torresian Crow	<i>Corvus orru</i>	2					
DICAEIDAE	Mistletoebird	<i>Dicaeum hirundinaceum</i>	1					
DICRURIDAE	Magpie-Lark	<i>Grallina cyanoleuca</i>				6	4	6
DICRURIDAE	Restless Flycatcher	<i>Myiagra inquieta</i>					1	
DICRURIDAE	Willie Wagtail	<i>Rhipidura leucophrys</i>			3		2	1
DICRURIDAE	Northern Fantail	<i>Rhipidura rufiventris</i>			1			
MALURIDAE	Red-backed Fairy-wren	<i>Malurus melanocephalus</i>			7	14		

### Appendix 3 Fauna survey results

Family Name	Common name	Scientific name	7A1	7A2	7B1	7B2	7C1	7C2
MELIPHAGIDAE	Blue-faced Honeyeater	<i>Entomyzon cyanotis</i>				1		
MELIPHAGIDAE	White-gaped Honeyeater	<i>Lichenostomus unicolor</i>			1			
MELIPHAGIDAE	Yellow-throated Miner	<i>Manorina flavigula</i>		11				
MELIPHAGIDAE	White-throated Honeyeater	<i>Melithreptus albogularis</i>			5	9	1	
MEROPIDAE	Rainbow Bee-eater	<i>Merops ornatus</i>	1			3		
NEOSITTIDAE	Varied Sittella	<i>Daphoenositta chrysoptera</i>						2
PACHYCEPHALIDAE	Rufous Whistler	<i>Pachycephala rufiventris</i>			3		1	
PARDALOTIDAE	Striated Pardalote	<i>Pardalotus striatus</i>		1	3	2	3	3
PARDALOTIDAE	Weebill	<i>Smicromis brevirostris</i>	2	8	1		2	4
PASSERIDAE	Long-tailed Finch	<i>Poephila acuticauda</i>			10			
PHASIANIDAE	Brown Quail	<i>Coturnix ypsilophora</i>				9		
PODARGIDAE	Tawny Frogmouth	<i>Podargus strigoides</i>					1	
POMATOSTOMIDAE	Grey-crowned Babbler	<i>Pomatostomus temporalis</i>				7		
PSITTACIDAE	Red-winged Parrot	<i>Aprosmictus erythropterus</i>		2				
PSITTACIDAE	Northern Rosella	<i>Platycercus venustus</i>	42	2		1	6	
PSITTACIDAE	Rainbow Lorikeet	<i>Trichoglossus haematodus</i>		1		3		1
PTILONORHYNCHIDAE	Great Bowerbird	<i>Chlamydera nuchalis</i>	1			1		
SYLVIIDAE	Golden-headed Cisticola	<i>Cisticola exilis</i>			2	5		
SYLVIIDAE	Tawny Grassbird	<i>Megalurus timoriensis</i>				2		
	<b>Mammals</b>							
CANIDAE	Dingo	<i>Canis lupus</i>						1
DASYURIDAE	Dunnart	<i>Sminthopsis bindi</i>	1					
DASYURIDAE	Red-cheeked Dunnart	<i>Sminthopsis virginiae</i>				1		
MURIDAE	Grassland Melomys	<i>Melomys burtoni</i>			1			
MURIDAE	Pale Field Rat	<i>Rattus tunneyi</i>	2	8	5	23		1
MURIDAE	Common Rock-rat	<i>Zyzomys argurus</i>	8	7				

## Appendix 3 Fauna survey results

### Dorisvale Survey Site - Flora

Family name	Species name	Common name	7A1	7A2	7B1	7B2	7C1	7C2
	<b>Dominant</b>							
AMARANTHACEAE	<i>Gomphrena sp.</i>						G	G
ARECACEAE	<i>Livistona humilis</i>			M				
BIXACEAE	<i>Cochlospermum fraseri</i>		M					
CAESALPINIACEAE	<i>Erythrophleum chlorostachys</i>	Ironwood	U	M/G	M/G			M
COMBRETACEAE	<i>Terminalia ferdinandiana</i>		M	M				M
EUPHORBIACEAE	<i>Croton arnhemicus</i>			M				
EUPHORBIACEAE	<i>Petalostigma quadriloculare</i>		G	G				G
MORACEAE	<i>Ficus coronulata</i>				M			
MYRTACEAE	<i>Corymbia bella</i>				U	U		
MYRTACEAE	<i>Corymbia ferruginea</i>			M				M
MYRTACEAE	<i>Corymbia foelscheana</i>				M		M	M
MYRTACEAE	<i>Corymbia setosa</i>		M					
MYRTACEAE	<i>Eucalyptus miniata</i>		M	U				
MYRTACEAE	<i>Eucalyptus polysciada</i>			M				
MYRTACEAE	<i>Eucalyptus saplings</i>							M
MYRTACEAE	<i>Eucalyptus seedlings</i>			G	G	G	M/G	
MYRTACEAE	<i>Eucalyptus tectifera</i>		U		U		U	U
MYRTACEAE	<i>Eucalyptus tetradonta</i>			U	U		U	
MYRTACEAE	<i>Lophostemon grandiflorus</i>				M			
POACEAE	<i>Eriachne sp.</i>		G					G
POACEAE	<i>Heteropogon contortus</i>				G	G		
POACEAE	<i>Heteropogon triticeus</i>		G	G			G	G
POACEAE	<i>Mnesithea rottboellioides</i>				G	G		
POACEAE	<i>Sarga intrans</i>	Darwin Canegrass	G	G	G	G		G
POACEAE	<i>Sarga plumosum</i>			G				
POACEAE	<i>Setaria apiculata</i>						G	
POACEAE	<i>Themeda triandra</i>		G	G	G	G	G	G
PROTEACEAE	<i>Grevillia decurrens</i>		M					
PROTEACEAE	<i>Persoonia falcata</i>			M/G				
RUBIACEAE	<i>Spermacoe sp.</i>		G				G	G
STERCULIACEAE	<i>Brachychiton paradoxus</i>		M		G		G	G
TILIACEAE	<i>Grewia retusifolia</i>				G	G		
	<b>Other sub-dominant species</b>							
ACANTHACEAE	<i>Nelsonia campestris</i>					G		
AIZOACEAE	<i>Trianthema rhynchocalyptra</i>							G
ASTERACEAE	<i>Pterocaulon</i>				G			

### Appendix 3 Fauna survey results

Family name	Species name	Common name	7A1	7A2	7B1	7B2	7C1	7C2
	<i>verbascifolium</i>							
COMBRETACEAE	<i>Terminalia canescens</i>		U	U				U
DILLENACEAE	<i>Hibbertia sp.</i>			G				
ERYTHROXYLACEAE	<i>Erythroxylum ellipticum</i>				G			
EUPHORBIACEAE	<i>Antidesma ghesaembilla</i>				G			
EUPHORBIACEAE	<i>Euphorbia sp.</i>					G		
EUPHORBIACEAE	<i>Sebastiania chamaelea</i>			G				
FABACEAE	<i>Flemingia lineata</i>					G		
FABACEAE	<i>Tephrosia sp.</i>			G				
MALVACEAE	<i>Hibiscus meraukensis</i>				M			
MALVACEAE	<i>Sida sp.</i>					G		
MYRTACEAE	<i>Eucalyptus seedlings</i>		G					
MYRTACEAE	<i>Lophostemon grandiflorus</i>				U			
POACEAE	<i>Arundinella nepalensis</i>				G			
POACEAE	<i>Echinochloa colona</i>					G		
POACEAE	<i>Paspalum scrobiculatum</i>					G		
POACEAE	<i>Setaria apiculata</i>				G			
SCROPHULARIACEAE	<i>Buchnera linearis</i>			G				
STERCULIACEAE	<i>Brachychiton diversifolius</i>	Kurrajong		M				
STERCULIACEAE	<i>Brachychiton paradoxus</i>			G				

## Appendix 3 Fauna survey results

### Chambers River Survey Site - Fauna

Family Name	Common name	Scientific name	4A1	4A2	4B1	4B2	4C1	4C2
			Total	Total	Total	Total	Total	Total
	<b>Frogs</b>							
BUFONIDAE	Cane Toad	<i>Bufo marinus</i>	24	17	17	17	4	3
HYLIDAE	Dwarf tree frog	<i>Litoria bicolor</i>	17	2				
HYLIDAE	Green tree frog	<i>Litoria caerulea</i>	1		1		1	2
HYLIDAE	Copland's Treefrog	<i>Litoria coplandi</i>	1					
HYLIDAE	Peter's Frog	<i>Litoria inermis</i>	8	2	2	4		
HYLIDAE	Rocket Frog	<i>Litoria nasuta</i>	7	2				
HYLIDAE	Frog	<i>Litoria pallida</i>	8	1		1		
HYLIDAE	Desert tree frog	<i>Litoria rubella</i>		1	2	3		
HYLIDAE		<i>Litoria tornieri</i>			1			
HYLIDAE	Wotjulum Frog	<i>Litoria wotjulumensis</i>	17	6	1	9	1	
MYOBATRACHIDAE		<i>Crinia remota</i>	1	8				
MYOBATRACHIDAE	Ornate burrowing frog	<i>Limnodynastes ornatus</i>	2	4				
MYOBATRACHIDAE	Spadefoot toad	<i>Notaden melanoscaphus</i>	3	5	50	26		
MYOBATRACHIDAE		<i>Uperoleia lithomoda</i>	22	31	19	5		
	<b>Reptiles</b>							
AGAMIDAE	Dragon	<i>Diporiphora albilabris sobria</i>		1			5	4
AGAMIDAE	Two-lined dragon	<i>Diporiphora bilineata</i>	2		2	2		
AGAMIDAE	Gilberts Dragon	<i>Lophognathus gilberti</i>	1	4		1		1
BOIDAE	Children's Python	<i>Antaresia childreni</i>						1
COLUBRIDAE	Keelback	<i>Tropidonophis mairii</i>		1				
ELAPIDAE	Northern Shovel-nosed Snake	<i>Brachyuropsis roperi</i>	1					
ELAPIDAE	Northern Small-eyed snake	<i>Rhinoplocephalus pallidiceps</i>		1				
GEKKONIDAE	Gecko	<i>Gehyra australis</i>					1	
GEKKONIDAE	Prickly gecko	<i>Heteronotia binoei</i>	1					1
GEKKONIDAE	Gecko	<i>Oedura rhombifer</i>						1
GEKKONIDAE	Northern Spiny-tailed gecko	<i>Strophurus ciliaris</i>			1			
SCINCIDAE	Skink	<i>Carlia amax</i>						4
SCINCIDAE	Skink	<i>Carlia munda</i>				1		
SCINCIDAE	Skink	<i>Carlia munda</i>				1		
SCINCIDAE	Skink	<i>Cryptoblepharus plagiocephalus</i>	2			1		1
SCINCIDAE	Skink	<i>Ctenotus decaneurus</i>					1	1
SCINCIDAE	Skink	<i>Ctenotus hilli</i>	7	6		1		
SCINCIDAE	Skink	<i>Ctenotus inornatus</i>	2					
SCINCIDAE	Skink	<i>Ctenotus spaldingi</i>			1	1		

### Appendix 3 Fauna survey results

Family Name	Common name	Scientific name	4A1	4A2	4B1	4B2	4C1	4C2
			Total	Total	Total	Total	Total	Total
SCINCIDAE	Skink	<i>Ctenotus vertebralis</i>	2	1				1
SCINCIDAE	Skink	<i>Menetia sp.</i>			1			
SCINCIDAE	Skink	<i>Morethia storri</i>	1			1		
VARANIDAE		<i>Varanus primordius</i>						1
	<b>Birds</b>							
ACCIPITRIDAE	Wedge-tailed Eagle	<i>Aquila audax</i>	1				1	
ACCIPITRIDAE	Whistling Kite	<i>Haliastur sphenurus</i>	1					
ACCIPITRIDAE	Black Kite	<i>Milvus migrans</i>		4	2		1	
ARDEIDAE	White-necked Heron	<i>Ardea pacifica</i>				1		
ARTAMIDAE	Black-faced Woodswallow	<i>Artamus cinereus</i>					8	
CACATUIDAE	Sulphur-crested Cockatoo	<i>Cacatua galerita</i>	1					
CACATUIDAE	Red-tailed Black-Cockatoo	<i>Calyptorhynchus banksii</i>	6		1		1	2
CACATUIDAE	Galah	<i>Eolophus roseicapilla</i>		1	3	3		6
CACATUIDAE	Cockatiel	<i>Nymphicus hollandicus</i>					6	
CAMPEPHAGIDAE	Black-faced Cuckoo-Shrike	<i>Coracina novaehollandiae</i>	1		2		2	1
CAMPEPHAGIDAE	White-bellied Cuckoo-Shrike	<i>Coracina papuensis</i>	1		2	1	1	3
CAMPEPHAGIDAE	Varied Triller	<i>Lalage leucomela</i>	1		2		3	
CAMPEPHAGIDAE	White-winged Triller	<i>Lalage sueurii</i>			1			
COLUMBIDAE	Diamond Dove	<i>Geopelia cuneata</i>					2	
COLUMBIDAE	Peaceful Dove	<i>Geopelia striata</i>	1	1	11	2	7	3
COLUMBIDAE	Common Bronzewing	<i>Phaps chalcoptera</i>				1	1	
CORVIDAE	Torresian Crow	<i>Corvus orru</i>	3	3				1
DICRURIDAE	Magpie-Lark	<i>Grallina cyanoleuca</i>				10	10	
DICRURIDAE	Restless Flycatcher	<i>Myiagra inquieta</i>	1					
DICRURIDAE	Leaden Flycatcher	<i>Myiagra rubecula</i>				1		
DICRURIDAE	Willie Wagtail	<i>Rhipidura leucophrys</i>		1	1		1	
FALCONIDAE	Brown Falcon	<i>Falco berigora</i>	1			1		
FALCONIDAE	Nankeen Kestrel	<i>Falco cenchroides</i>						1
HALCYONIDAE	Blue-winged Kookaburra	<i>Dacelo leachii</i>			1			
MALURIDAE	Red-backed Fairy-wren	<i>Malurus melanocephalus</i>	1					
MELIPHAGIDAE	Banded Honeyeater	<i>Certhionyx pectoralis</i>			3			
MELIPHAGIDAE	Rufous-banded Honeyeater	<i>Conopophila albogularis</i>		3	6			
MELIPHAGIDAE	Rufous-throated Honeyeater	<i>Conopophila rufogularis</i>			2			
MELIPHAGIDAE	Blue-faced	<i>Entomyzon</i>	6	1	5	5	2	

### Appendix 3 Fauna survey results

Family Name	Common name	Scientific name	4A1	4A2	4B1	4B2	4C1	4C2
			Total	Total	Total	Total	Total	Total
	Honeyeater	<i>cyanotis</i>						
MELIPHAGIDAE	White-gaped Honeyeater	<i>Lichenostomus unicolor</i>		4	3			
MELIPHAGIDAE	Brown Honeyeater	<i>Lichmera indistincta</i>	1	7	1			
MELIPHAGIDAE	White-throated Honeyeater	<i>Melithreptus albogularis</i>	1	1	4	2	1	3
MELIPHAGIDAE	Helmeted Friarbird	<i>Philemon buceroides</i>	4		7	1		
MEROPIDAE	Rainbow Bee-eater	<i>Merops ornatus</i>		4	1	2		1
NEOSITTIDAE	Varied Sittella	<i>Daphoenositta chrysoptera</i>	1		5		5	
ORIOLOIDAE	Figbird	<i>Sphecotheres viridis</i>		1				
PACHYCEPHALIDAE	Rufous Whistler	<i>Pachycephala rufiventris</i>		1			1	1
PARDALOTIDAE	Striated Pardalote	<i>Pardalotus striatus</i>	2	2	2	3		
PARDALOTIDAE	Weebill	<i>Smicrornis brevirostris</i>	3		3	5	2	
PASSERIDAE	Gouldian Finch	<i>Erythrura gouldiae</i>			1		6	
PASSERIDAE	Crimson Finch	<i>Neochmia phaeton</i>	6					
PASSERIDAE	Long-tailed Finch	<i>Poephila acuticauda</i>		1	1		4	
PASSERIDAE	Masked Finch	<i>Poephila personata</i>	1		1			
PASSERIDAE	Double-barred Finch	<i>Taeniopygia bichenovii</i>	1	5				
PETROICIDAE	Jacky Winter	<i>Microeca leucophaea</i>					3	1
PHASIANIDAE	Brown Quail	<i>Coturnix ypsilophora</i>			6	4		
PODARGIDAE	Tawny Frogmouth	<i>Podargus strigoides</i>					1	
POMATOSTOMIDAE	Grey-crowned Babbler	<i>Pomatostomus temporalis</i>					6	
PSITTACIDAE	Red-winged Parrot	<i>Aprosmictus erythropterus</i>						3
PSITTACIDAE	Hooded Parrot	<i>Psephotus dissimilis</i>			4			
PSITTACIDAE	Rainbow Lorikeet	<i>Trichoglossus haematodus</i>		1	2			
PTILONORHYNCHIDAE	Great Bowerbird	<i>Chlamydera nuchalis</i>			1	1	1	
	<b>Mammals</b>							
DASYURIDAE	Planigale	<i>Planigale maculata</i>				1		
DASYURIDAE	Dunnart	<i>Sminthopsis bindi</i>					1	
MACROPODIDAE	Agile wallaby	<i>Macropus agilis</i>					1	
MURIDAE	Delicate mouse	<i>Pseudomys delicatulus</i>			1			
PERAMELIDAE	Northern Brown Bandicoot	<i>Isodon macrourus</i>			2			
PTEROPODIDAE	Little red flying fox	<i>Pteropus scapulatus</i>	1					

## Appendix 3 Fauna survey results

### Chambers River Survey Site - Flora

Family name	Species name	Common name	4A1	4A2	4B1	4B2	4C1	4C2
	<b>Dominant</b>							
CAESALPINIACEAE	<i>Erythrophleum chlorostachys</i>	Ironwood			U	U	U	U
COMBRETACHEAE	<i>Terminalia canescens</i>							M
MELIACEAE	<i>Owenia vernicosa</i>				U			U
MIMOSACEAE	<i>Acacia auriculiformis</i>			U				
MYRTACEAE	<i>Corymbia latifolia</i>						U	
MYRTACEAE	<i>Corymbia polycarpa</i>		U	U				
MYRTACEAE	<i>Eucalyptus camaldulensis</i>			U				
MYRTACEAE	<i>Eucalyptus miniata</i>				U			
MYRTACEAE	<i>Eucalyptus polysiada</i>		U					
MYRTACEAE	<i>Eucalyptus tectifca</i>					U	U	
MYRTACEAE	<i>Eucalyptus tetradonta</i>			U				
MYRTACEAE	<i>Melaleuca viridiflora</i>			M				
PANDANACEAE	<i>Pandanus spiralis</i>		U	U				
POACEAE	<i>Aristida holathera</i>		G					
POACEAE	<i>Arundinella nepalensis</i>			G				
POACEAE	<i>Eragrostis sp.</i>					G		
POACEAE	<i>Heteropogon contortus</i>		G					
POACEAE	<i>Sarga intrans</i>	Darwin Canegrass	G	G	G	G		G
POACEAE	<i>Triodia sp.</i>			G				G
PROTEACEAE	<i>Grevillea pteridifolia</i>		U	U				
	<b>Other sub-dominant species</b>							
ACANTHACEAE	<i>Hygrophila angustifolia</i>		G					
ACANTHACEAE	<i>Nelsonia campestris</i>			G				
AIZOACEAE	<i>Trianthema rhynchocalyptra</i>						G	
ANACARDIACEAE	<i>Buchanania obovata</i>	Green Plum		M	U			
ANACARDIACEAE	<i>Buchanania obovata</i>	Green Plum	M					
CAESALPINIACEAE	<i>Chamaecrista mimosoides</i>					G		
CAESALPINIACEAE	<i>Erythrophleum chlorostachys</i>	Ironwood	U	U				
COMBRETACEAE	<i>Terminalia grandiflora</i>				U			
COMBRETACEAE	<i>Terminalia ferdinandiana</i>					U		
COMBRETACEAE	<i>Terminalia pterocarya</i>			M				
CONVOLVULACEAE	<i>Ipomoea eriocarpa</i>				M			
CONVOLVULACEAE	<i>Polymeria ambigua</i>			G				
CYPERACEAE	<i>Cyperus haspan</i>			G				
CYPERACEAE	<i>Fuirena ciliaris</i>		G					
CYPERACEAE	<i>Rhynchospora subtenuifolia</i>					G		
ERYTHROXYLACEAE	<i>Erythroxylum ellipticum</i>							U
EUPHORBIACEAE	<i>Petalostigma banksii</i>					M	U	
EUPHORBIACEAE	<i>Petalostigma quadriloculare</i>						M	
EUPHORBIACEAE	<i>Petalostigma quadriloculare</i>							M
EUPHORBIACEAE	<i>Sebastiania chamaelea</i>			G				
GOODENIACEAE	<i>Scaevola sp.</i>		G					

### Appendix 3 Fauna survey results

Family name	Species name	Common name	4A1	4A2	4B1	4B2	4C1	4C2
LAMIACEAE	<i>*Hyptis suaveolens</i>			M				
MALVACEAE	<i>Hibiscus meraukensis</i>			G				M
MELIACEAE	<i>Owenia vernicosa</i>			M				
MIMOSACEAE	<i>Acacia holosericea</i>			M				
MIMOSACEAE	<i>Acacia umbellata</i>			M				
MORACEAE	<i>Ficus aculeata</i>				M			
MYRTACEAE	<i>Calytrix achaeta</i>							M
MYRTACEAE	<i>Corymbia grandifolia</i>							U
MYRTACEAE	<i>Corymbia latifolia</i>					U		
MYRTACEAE	<i>Corymbia polycarpa</i>							U
MYRTACEAE	<i>Eucalyptus polysiada</i>			U	U	U		U
MYRTACEAE	<i>Eucalyptus tectifica</i>		U					
MYRTACEAE	<i>Eucalyptus tintinnans</i>						U	U
MYRTACEAE	<i>Melaleuca viridiflora</i>		M			M		
ONAGRACEAE	<i>Ludwigia perennis</i>					M		
PAPILIONACEAE	<i>Crotalaria calycina</i>		G					
PAPILIONACEAE	<i>Crotalaria calycina</i>				G			
PAPILIONACEAE	<i>Crotalaria goreensis**</i>				G	M		
PAPILIONACEAE	<i>Crotalaria retusa</i>		M					
PASSIFLORACEAE	<i>Passiflora foetida</i>	Wild Passionfruit		M				
PHILYDRACEAE	<i>Philydrum lanuginosum</i>		G					
POACEAE	<i>Ectrosia leporina</i>		G					
POACEAE	<i>Ectrosia leporina</i>			G				
POACEAE	<i>Elytrophorus spicatus</i>		G					
POACEAE	<i>Eragrostis elongata</i>		G					
POACEAE	<i>Eragrostis sp.</i>							G
POACEAE	<i>Heteropogon contortus</i>					G		
POACEAE	<i>Mnesithea rottboellioides</i>			G				
POACEAE	<i>Panicum sp.</i>			G				
POACEAE	<i>Paspalum scrobiculatum</i>		G					
POACEAE	<i>Pseudopogonatherum contortum</i>		G					
POACEAE	<i>Pseudopogonatherum contortum</i>					G		
POACEAE	<i>Sarga intrans</i>						G	
POACEAE	<i>Setaria surgens</i>				G			
POACEAE	<i>Triodia sp.</i>						G	
PROTEACEAE	<i>Grevillea pteridifolia</i>			M	U	U		
RHAMNACEAE	<i>Alphitonia incana</i>				M			
RUBIACEAE	<i>Spermacoce calliantha</i>		M					
RUBIACEAE	<i>Spermacoce leptoloba</i>						G	G
STERCULIACEAE	<i>Brachychiton diversifolius</i>	Kurrajong	M		U	U/M		
STERCULIACEAE	<i>Brachychiton megaphyllus</i>	Red-flowered Kurrajong			M	M		
STERCULIACEAE	<i>Waltheria indica</i>		M	M				M
THYMELAEACEAE	<i>Thecanthes punicea</i>					M		
TILIACEAE	<i>Grewia retusifolia</i>				M	M		
VIOLACEAE	<i>Hybanthus enneaspermus</i>			G				
VITACEAE	<i>Ampelocissus sp.</i>		M					

## Appendix 3 Fauna survey results

### Chainman and Chinaman Creeks Survey Sites - Fauna

Family	Common name	Scientific name	3A1	3A2	3B1	3B2	3C1	3C2
			Total	Total	Total	Total	Total	Total
	<b>Frogs</b>							
BUFONIDAE	Cane Toad	<i>Bufo marinus</i>	1		3		1	
HYLIDAE	Green tree frog	<i>Litoria caerulea</i>			1			
HYLIDAE	Peter's Frog	<i>Litoria inermis</i>					2	
HYLIDAE	Rocket Frog	<i>Litoria nasuta</i>		1		1		
HYLIDAE	Desert tree frog	<i>Litoria rubella</i>					1	
HYLIDAE	Wotjulum Frog	<i>Litoria wotjulumensis</i>		1	2		3	
MYOBATRACHIDAE	Ornate burrowing frog	<i>Limnodynastes ornatus</i>					3	
MYOBATRACHIDAE	Stonemason's Toadlet	<i>Uperoleia lithomoda</i>	1				1	
	<b>Reptiles</b>							
AGAMIDAE	Two-lined dragon	<i>Diporiphora bilineata</i>			1	2	5	3
AGAMIDAE	Dragon	<i>Diporiphora magna</i>	2				2	1
AGAMIDAE	Gilberts Dragon	<i>Lophognathus gilberti</i>			2		3	
GEKKONIDAE	Fat-tailed Gecko	<i>Diplodactylus conspicillatus</i>						1
GEKKONIDAE	Gecko	<i>Gehyra australis</i>	1		2		1	
GEKKONIDAE	Gecko	<i>Gehyra nana</i>						2
GEKKONIDAE	Bynoe's gecko	<i>Heteronotia binoei</i>			2	1		2
GEKKONIDAE	Northern Spiny-tailed gecko	<i>Strophurus ciliaris</i>				1		
SCINCIDAE	Skink	<i>Carlia amax</i>			3			
SCINCIDAE	Skink	<i>Carlia munda</i>					2	
SCINCIDAE	Three-keeled Rainbow skink	<i>Carlia triacantha</i>	2	1	1	3		
SCINCIDAE	Skink	<i>Cryptoblepharus plagiocephalus</i>	2			1	2	
SCINCIDAE	Skink	<i>Ctenotus hilli</i>			3			
SCINCIDAE	Skink	<i>Ctenotus pantherinus</i>		2				
SCINCIDAE	Skink	<i>Ctenotus aff. spaldingi</i> (Paul Horner pers.comm.)		1				
SCINCIDAE	Skink	<i>Proablepharus tenuis</i>		1				
	<b>Birds</b>							
ACCIPITRIDAE	Collared Sparrowhawk	<i>Accipiter cirrhocephalus</i>				1		
ACCIPITRIDAE	Wedge-tailed Eagle	<i>Aquila audax</i>				1		
ACCIPITRIDAE	Black Kite	<i>Milvus migrans</i>		2	1			
AEGOTHELIDAE	Australian Owlet-nightjar	<i>Aegotheles cristatus</i>		2				1
ALCEDINIDAE	Azure Kingfisher	<i>Ceyx azurea</i>					1	
ARTAMIDAE	Black-faced Woodswallow	<i>Artamus cinereus</i>				1	3	1
ARTAMIDAE	Pied Butcherbird	<i>Cracticus nigrogularis</i>		1			2	1

### Appendix 3 Fauna survey results

Family	Common name	Scientific name	3A1	3A2	3B1	3B2	3C1	3C2
			Total	Total	Total	Total	Total	Total
CACATUIDAE	Red-tailed Black-cockatoo	<i>Calyptorhynchus banksii</i>			1			
CACATUIDAE	Galah	<i>Eolophus roseicapilla</i>	6	1	1	1		
CACATUIDAE	Cockatiel	<i>Nymphicus hollandicus</i>						4
CAMPEPHAGIDAE	Black-faced Cuckoo-shrike	<i>Coracina novaehollandiae</i>					3	
CAMPEPHAGIDAE	White-bellied Cuckoo-shrike	<i>Coracina papuensis</i>					1	
CAMPEPHAGIDAE	White-winged Triller	<i>Lalage sueurii</i>					5	
CICONIIDAE	Black-necked Stork	<i>Ephippiorhynchus asiaticus</i>					1	
CLIMACTERIDAE	Black-tailed Treecreeper	<i>Climacteris melanura</i>		2				
COLUMBIDAE	Bar-shouldered Dove	<i>Geopelia humeralis</i>	1				5	
COLUMBIDAE	Peaceful Dove	<i>Geopelia striata</i>	3	1	1		2	
CORCORACIDAE	Apostlebird	<i>Struthidea cinerea</i>					20	
CORVIDAE	Torresian Crow	<i>Corvus orru</i>				1		
CUCULIDAE	Brush Cuckoo	<i>Cacomantis variolosus</i>					1	
CUCULIDAE	Horsefield's Bronze-cuckoo	<i>Chrysococcyx basalis</i>	1					
CUCULIDAE	Pallid Cuckoo	<i>Cuculus pallidus</i>	1					
DICAEIDAE	Mistletoebird	<i>Dicaeum hirundinaceum</i>		1			1	
DICRURIDAE	Magpie-lark	<i>Grallina cyanoleuca</i>		1		1	2	
DICRURIDAE	Restless Flycatcher	<i>Myiagra inquieta</i>		1	1		1	
DICRURIDAE	Leaden Flycatcher	<i>Myiagra rubecula</i>			1			
DICRURIDAE	Willie Wagtail	<i>Rhipidura leucophrys</i>		1	1	2	3	
HALCYONIDAE	Red-backed Kingfisher	<i>Todiramphus pyrrophygia</i>	2					
MALURIDAE	Red-backed Fairy Wren	<i>Malurus melanocephalus</i>		4				2
MELIPHAGIDAE	Yellow-tinted Honeyeater	<i>Lichenostomus flavescens</i>		1				
MELIPHAGIDAE	White-throated Honeyeater	<i>Melithreptus albogularis</i>					2	
MEROPIIDAE	Rainbow Bee-eater	<i>Merops ornatus</i>			5	2	1	
NEOSITTIDAE	Varied Sittella	<i>Daphoenositta chrysoptera</i>		4			3	
PACHYCEPHALIDAE	Little Shrike-thrush	<i>Colluricincla megarrhyncha</i>					1	
PACHYCEPHALIDAE	Rufous Whistler	<i>Pachycephala rufiventris</i>				3		
PARDALOTIDAE	Striated Pardalote	<i>Pardalotus striatus</i>		1				
PARDALOTIDAE	Weebill	<i>Smicrornis brevirostris</i>				1	1	
PASSERIDAE	Masked Finch	<i>Poephila personata</i>		1			1	
PASSERIDAE	Double-barred Finch	<i>Taeniopygia bichenovii</i>			1		3	
PETROICIDAE	Jacky Winter	<i>Microeca</i>		1				

### Appendix 3 Fauna survey results

Family	Common name	Scientific name	3A1	3A2	3B1	3B2	3C1	3C2
			Total	Total	Total	Total	Total	Total
		<i>leucophaea</i>						
PHASIANIDAE	Brown Quail	<i>Coturnix ypsilophora</i>				4	4	
PODARGIDAE	Tawny Frogmouth	<i>Podargus strigoides</i>	1					
POMATOSTOMIDAE	Grey-crowned Babbler	<i>Pomatostomus temporalis</i>		1			7	
PSITTACIDAE	Red-winged Parrot	<i>Aprosmictus erythropterus</i>					1	1
PSITTACIDAE	Northern Rosella	<i>Platycercus venustus</i>						2
PSITTACIDAE	Hooded Parrot	<i>Psephotus dissimilis</i>	2	6				
PSITTACIDAE	Varied Lorikeet	<i>Psitteuteles versicolor</i>					4	
PSITTACIDAE	Rainbow Lorikeet	<i>Trichoglossus haematodus</i>	10	5	3	8	7	
PTILONORHYNCHIDAE	Great Bowerbird	<i>Chlamydera nuchalis</i>			1	2		
SYLVIIDAE	Golden-headed Cisticola	<i>Cisticola exilis</i>					1	
	<b>Mammals</b>							
EQUIDAE	Donkey (feral)	<i>Equus asinus</i>		1				
MACROPODIDAE	Agile wallaby	<i>Macropus agilis</i>				1		
MURIDAE	Common Rock-rat	<i>Zyomys argurus</i>				2	1	
PERAMELIDAE	Bandicoot	<i>Isodon macrourus</i>			1			

## Appendix 3 Fauna survey results

### Chainman and Chinaman Creeks Survey Sites - Flora

Family name	Species name	Common name	3A1	3A2	3B1	3B2	3C1	3C2
	<i>Dominant</i>							
ANACARDIACEAE	<i>Buchanania obovata</i>				U			
CAESALPINIACEAE	<i>Erythrophleum chlorostachys</i>	Ironwood				U	U	
MIMOSACEAE	<i>Acacia bidwillii</i>			U	M			U
MORACEAE	<i>Ficus scobina</i>				M			
MYRTACEAE	<i>Corymbia foelscheana</i>		U	U	U	U	U	U
MYRTACEAE	<i>Corymbia polysciada</i>						U	
MYRTACEAE	<i>Eucalyptus polysciada</i>			U		U		
MYRTACEAE	<i>Eucalyptus tectifera</i>		U		U	U	U	
MYRTACEAE	<i>Lophostemon grandiflorus</i>				U		U	
PASSIFLORACEAE	<i>*Passiflora foetida</i>	Wild Passion-fruit					G	
POACEAE	<i>*Pennisetum pedicellatum</i>	Annual Mission-grass					G	
POACEAE	<i>Eriachne sp.</i>					G		
POACEAE	<i>Heteropogon contortus</i>				G		G	
POACEAE	<i>Sarga intrans</i>	Darwin Canegrass		G	G	G	G	G
POACEAE	<i>Setaria apiculata</i>	Pigeon grass	G					
POACEAE	<i>Themeda triandra</i>	Kangaroo grass	G	G	G	G	G	
PROTEACEAE	<i>Hakea arborescens</i>			U	U			
RUBIACEAE	<i>Timonius timon</i>				M			
SANTALACEAE	<i>Santalum lanceolatum</i>				M			
STERCULIACEAE	<i>Brachychiton diversifolius</i>	Kurrajong					U	U
STERCULIACEAE	<i>Brachychiton megaphyllus</i>	Red-flowered Kurrajong				U	M	U
	<b>Other sub-dominant species</b>							
ANACARDIACEAE	<i>Buchanania obovata</i>	Green Plum				G	M	
APOCYNACEAE	<i>Wrightia saligna</i>							M
ASCLEPIADACEAE	<i>*Calotropis procera</i>	Rubber Bush				M		
BIGNONIACEAE	<i>Dolichandrone filiformis</i>				M			
CAESALPINIACEAE	<i>Bauhinia cunninghamiana</i>	Bauhinia	U		M			
CAESALPINIACEAE	<i>Erythrophleum chlorostachys</i>	Ironwood	U					U
COMBRETACEAE	<i>Terminalia carpentariae</i>				M			
COMBRETACEAE	<i>Terminalia platyphylla</i>						M	
CONVOLVULACEAE	<i>Evolvulus alsinoides</i>							G
CONVOLVULACEAE	<i>Ipomoea eriocarpa</i>						G	G
CONVOLVULACEAE	<i>Ipomoea graminea</i>		G					
CYPERACEAE	<i>Fimbristylis pterygosperma</i>		G					
DIOSCOREACEAE	<i>Dioscorea transversa</i>						G	
FABACEAE	<i>Clitoria ternatea</i>				M			
FABACEAE	<i>Crotalaria crispata</i>							M
FABACEAE	<i>Crotalaria montana</i>			G				
FABACEAE	<i>Crotalaria retusa</i>							M

### Appendix 3 Fauna survey results

Family name	Species name	Common name	3A1	3A2	3B1	3B2	3C1	3C2
FABACEAE	<i>Glycine tomentella</i>							G
FABACEAE	<i>Indigofera linifolia</i>							G
GOODENIACEAE	<i>Goodenia hispida</i>		G			G	G	G
LAMIACEAE	* <i>Hyptis suaveolens</i>				M	M	M	
LOGANIACEAE	<i>Strychnos lucida</i>				M			
MALVACEAE	<i>Gossypium australe</i>				M	M		
MENISPERMACEAE	<i>Tinospora smilacina</i>	Snake-vine	M					
MIMOSACEAE	<i>Acacia bidwillii</i>			M		M		
MIMOSACEAE	<i>Acacia hemignosta</i>	Club-leaf Wattle	U					
MIMOSACEAE	<i>Acacia holosericea</i>			M				
MIMOSACEAE	<i>Acacia pachyphloia</i>							M
MYRTACEAE	<i>Corymbia aspera</i>						U	
MYRTACEAE	<i>Corymbia sp.</i>						U	
MYRTACEAE	<i>Eucalyptus camaldulensis</i>	River Red-gum					U	
MYRTACEAE	<i>Eucalyptus confertiflora</i>				U			
MYRTACEAE	<i>Eucalyptus polysciada</i>		U		U			
MYRTACEAE	<i>Eucalyptus tectifera</i>			U				
MYRTACEAE	<i>Lophostemon lactifluus</i>						U	
PANDANACEAE	<i>Pandanus aquaticus</i>				M			
PASSIFLORACEAE	<i>Passiflora foetida</i>	Wild Passionfruit	M					
POACEAE	* <i>Pennisetum pedicellatum</i>	Annual Mission-grass				G		
POACEAE	<i>Chrysopogn sp.</i>				M	G		
POACEAE	<i>Chrysopogon fallax</i>		G					
POACEAE	<i>Eriachne sp.</i>			G				
POACEAE	<i>Sarga sp.</i>						G	
POACEAE	<i>Setaria apiculata</i>		G			M	G	
POACEAE	<i>Themeda triandra</i>	Kangaroo Grass						G
POACEAE	<i>Whiteochloa airoides</i>					G		
PROTEACEAE	<i>Grevillea dimidiata</i>							M
PROTEACEAE	<i>Hakea arborescens</i>		U			M		
RUBIACEAE	<i>Spermacoce sp.</i>		G				G	G
SANTALACEAE	<i>Santalum lanceolatum</i>				M			
SCROPHULARIACEAE	<i>Buchnera linearis</i>		G	G		G	G	G
STERCULIACEAE	<i>Brachychiton diversifolius</i>	Kurrajong		U/G	U	U/M		
STERCULIACEAE	<i>Brachychiton megaphyllus</i>	Red-flowered Kurrajong	M	U	M			
STERCULIACEAE	<i>Waltheria indica</i>					G	G	
STYLIDIACEAE	<i>Stylidium leptorrhizum</i>		G					
TILIACEAE	<i>Grewia retusifolia</i>		M	M	M			M
ULMACEAE	<i>Trema tomentosa</i>							M
VERBENACEAE	<i>Vitex glabrata</i>						G	
VITACEAE	<i>Ampelocissus acetosa</i>			M		M	M	
VITACEAE	<i>Cayratia maritima</i>							G
VITACEAE	<i>Cayratia trifolia</i>					M		

## Appendix 3 Fauna survey results

### Moyle River Survey Sites – Fauna

Family	Common name	Scientific name	6A1	6A2	6B1	6B2	6C1	6C2
			Total	Total	Total	Total	Total	Total
	<b>Frogs</b>							
HYLIDAE	Peter's Frog	<i>Litoria inermis</i>	3	3				
HYLIDAE	Rocket Frog	<i>Litoria nasuta</i>		2				
HYLIDAE	Roth's Tree Frog	<i>Litoria rothii</i>		1				
HYLIDAE	Tornier's Frog	<i>Litoria torieri</i>	2	1				
HYLIDAE	Wotjulum Frog	<i>Litoria wotjulumensis</i>	3	5				
MYOBATRACHIDAE		<i>Crinia remota</i>	44	57				
MYOBATRACHIDAE	Marbled Frog	<i>Limnodynastes convexiusculus</i>	1	2				
MYOBATRACHIDAE	Ornate burrowing frog	<i>Limnodynastes ornatus</i>		1				
MYOBATRACHIDAE	Stonemason's Toadlet	<i>Uperoleia lithomoda</i>	28	3				
	<b>Reptiles</b>							
AGAMIDAE		<i>Diporiphora albilabris sobria</i>			1	2		
AGAMIDAE	Two-lined dragon	<i>Diporiphora bilineata</i>	1	1	3	2	1	1
AGAMIDAE		<i>Diporiphora sp. (arnhemica?)</i>			1			
AGAMIDAE		<i>Diporiphora sp. (eaten by ants)</i>					1	
AGAMIDAE	Gilberts Dragon	<i>Lophognathus gilberti</i>					1	
GEKKONIDAE	Gecko	<i>Gehyra australis</i>				1		
GEKKONIDAE	Gecko	<i>Gehyra nana</i>			3			
GEKKONIDAE	Arnhem Land Spotted Dtella	<i>Gehyra pamela</i>			1			
GEKKONIDAE	Bynoe's gecko	<i>Heteronotia binoei</i>			1	1	1	
GEKKONIDAE	Northern Spiny-tailed gecko	<i>Strophurus ciliaris</i>						1
SCINCIDAE	Skink	<i>Carlia amax</i>				1		
SCINCIDAE	Skink	<i>Carlia gracilis</i>	9	10				
SCINCIDAE	Skink	<i>Carlia munda</i>	6	2	1	1	5	2
SCINCIDAE	Three-keeled Rainbow skink	<i>Carlia triacantha</i>				1		
SCINCIDAE	Skink	<i>Cryptoblepharus plagiocephalus</i>	2		5	1	2	2
SCINCIDAE	Skink	<i>Ctenotus essingtonii</i>	1	1	1			
SCINCIDAE	Skink	<i>Ctenotus inornatus</i>			1			
SCINCIDAE	Skink	<i>Menetia greyii</i>			3	2	1	
SCINCIDAE	Skink	<i>Morethia ruficauda</i>			1			

### Appendix 3 Fauna survey results

Family	Common name	Scientific name	6A1	6A2	6B1	6B2	6C1	6C2
			Total	Total	Total	Total	Total	Total
SCINCIDAE	Skink	<i>Notoscincus ornatus wotjulum</i>			2	1		
VARANIDAE	Sand Goanna	<i>Varanus gouldii</i>		1				
VARANIDAE	Merten's Water Monitor	<i>Varanus mertensi</i>	1					
VARANIDAE	Spotted Tree Monitor	<i>Varanus scalaris</i>					2	
	<b>Birds</b>							
ACCIPITRIDAE	Brown Goshawk	<i>Accipiter fasciatus</i>		1				
ACCIPITRIDAE	Whistling Kite	<i>Haliastur sphenurus</i>	2	4		1		
AEGOTHELIDAE	Australian Owlet-nightjar	<i>Aegotheles cristatus</i>		1				1
ANHINGIDAE	Darter	<i>Anhinga melanogaster</i>		4				
ARDEIDAE	Nankeen Night Heron	<i>Nycticorax caledonicus</i>	1					
ARTAMIDAE	White-breasted Woodswallow	<i>Artamus leucorhynchus</i>					4	6
ARTAMIDAE	Little Woodswallow	<i>Artamus minor</i>	1	4				
ARTAMIDAE	Pied Butcherbird	<i>Cracticus nigrogularis</i>				1		
CACATUIDAE	Red-tailed Black-cockatoo	<i>Calyptrorhynchus banksii</i>	1					
CAMPEPHAGIDAE	Black-faced Cuckoo-shrike	<i>Coracina novaehollandiae</i>	2				2	
CAMPEPHAGIDAE	White-bellied Cuckoo-shrike	<i>Coracina papuensis</i>	1				1	
COLUMBIDAE	Diamond Dove	<i>Geopelia cuneata</i>				1	2	3
COLUMBIDAE	Bar-shouldered Dove	<i>Geopelia humeralis</i>	8	10	1			
COLUMBIDAE	Peaceful Dove	<i>Geopelia striata</i>		3	4	1	6	2
CORVIDAE	Torresian Crow	<i>Corvus orru</i>		2	3		1	
DICAEIDAE	Mistletoebird	<i>Dicaeum hirundinaceum</i>	1	2	1			
DICRURIDAE	Spangled Drongo	<i>Dicrurus bracteatus</i>		1				
DICRURIDAE	Shining Flycatcher	<i>Myiagra alecto</i>	1	4				
DICRURIDAE	Willie Wagtail	<i>Rhipidura leucophrys</i>					2	2
DICRURIDAE	Northern Fantail	<i>Rhipidura rufiventris</i>		6				
HALCYONIDAE	Blue-winged Kookaburra	<i>Dacelo leachii</i>	1	1				

### Appendix 3 Fauna survey results

Family	Common name	Scientific name	6A1	6A2	6B1	6B2	6C1	6C2
			Total	Total	Total	Total	Total	Total
HIRUNDINIDAE	Tree Martin	<i>Hirundo nigricans</i>						4
MALURIDAE	Red-backed Fairy Wren	<i>Malurus melanocephalus</i>		4				
MELIPHAGIDAE	Blue-faced Honeyeater	<i>Entomyzon cyanotis</i>	3		3			
MELIPHAGIDAE	White-gaped Honeyeater	<i>Lichenostomus unicolor</i>		1				
MELIPHAGIDAE	Brown Honeyeater	<i>Lichmera indistincta</i>	1	8				
MELIPHAGIDAE	White-throated Honeyeater	<i>Melithreptus albogularis</i>	9	5				
MELIPHAGIDAE	Dusky Honeyeater	<i>Myzomela obscura</i>		1				
MELIPHAGIDAE	Silver-crowned Friarbird	<i>Philemon argenticeps</i>				1		1
MELIPHAGIDAE	Helmeted Friarbird	<i>Philemon buceroides</i>	1					
MEROPIDAE	Rainbow Bee-eater	<i>Merops ornatus</i>		5	3	1	2	
PACHYCEPHALIDAE	Rufous Whistler	<i>Pachycephala rufiventris</i>	1	6				
PARDALOTIDAE	Large-billed Gerygone	<i>Gerygone magnirostris</i>	1					
PARDALOTIDAE	Striated Pardalote	<i>Pardalotus striatus</i>	1	3		1	9	4
PARDALOTIDAE	Weebill	<i>Smicromis brevirostris</i>	1				1	
PASSERIDAE	Crimson Finch	<i>Neochmia phaeton</i>	1	2				
PASSERIDAE	Double-barred Finch	<i>Taeniopygia bichenovii</i>	2					
PETROICIDAE	Lemon-bellied Flycatcher	<i>Microeca flavigaster</i>	1	4				
PHASIANIDAE	Brown Quail	<i>Coturnix ypsilophora</i>					2	
PSITTACIDAE	Red-winged Parrot	<i>Aprosmictus erythropterus</i>	2	6	13			2
PSITTACIDAE	Rainbow Lorikeet	<i>Trichoglossus haematodus</i>	11	2	6	11	7	4
SYLVIIDAE	Golden-headed Cisticola	<i>Cisticola exilis</i>		2				
	<b>Mammals</b>							
DASYURIDAE	Northern quoll	<i>Dasyurus hallucatus</i>	3		1	3		
DASYURIDAE	Red-cheeked dunnart	<i>Sminthopsis virginiae</i>		1			1	
MACROPODIDAE	Agile wallaby	<i>Macropus agilis</i>		1				
MURIDAE	Grassland melomys	<i>Melomys burtoni</i>	8	7				
MURIDAE	Delicate Mouse	<i>Pseudomys delicatulus</i>			1		2	1

### Appendix 3 Fauna survey results

Family	Common name	Scientific name	6A1	6A2	6B1	6B2	6C1	6C2
			Total	Total	Total	Total	Total	Total
MURIDAE	Pale Field-rat	<i>Rattus tunneyi</i>	2				11	
MURIDAE	Common Rock-rat	<i>Zyomys argurus</i>			8			

## Appendix 3 Fauna survey results

### Moyle River Survey Sites – Flora

Family name	Species name	Common name	6A1	6A2	6B1	6B2	6C1	6C2
	<i>Dominant</i>							
MIMOSACEAE	<i>Acacia difficilis</i>							G
MIMOSACEAE	<i>Acacia leptocarpa</i>		M	M				
MIMOSACEAE	<i>Acacia oncinocarpa</i>				M/G			
MIMOSACEAE	<i>Acacia pellita</i>		M					
MIMOSACEAE	<i>Acacia sp.</i> (seedlings)							G
STERCULIACEAE	<i>Brachychiton paradoxus</i>		G				M	
ANACARDIACEAE	<i>Buchanania obovata</i>		G	G	M		G	
BIXACEAE	<i>Cochlospermum fraseri</i>					M		
MYRTACEAE	<i>Corymbia bleeseri</i>					U/G		
MYRTACEAE	<i>Corymbia polycarpa</i>		U	U				
MYRTACEAE	<i>Corymbia sp.</i> (seedlings)					G		
MYRTACEAE	<i>Corymbia ptychocarpa</i>		M					
DROSERACEAE	<i>Drosera sp.</i>							G
MYRTACEAE	<i>Melaleuca leucadendra</i>		U	U/M				
MYRTACEAE	<i>Melaleuca viridiflora</i>		U	U				
MYRTACEAE	<i>Melaleuca sp.</i> (seedlings)						G	G
POACEAE	<i>Ectrosia sp.</i>		G				G	
POACEAE	<i>Eriachne sp.</i>							G
POACEAE	<i>Eriachne schultziiana</i>		G			G		G
POACEAE	<i>Eriachne trisetata</i>		G	G				
POACEAE	<i>Eragrostis sp.</i>							G
CAESALPINIACEAE	<i>Erythrophleum chlorostachys</i>	Ironwood	G	U/G	M	U/G	G	G
MYRTACEAE	<i>Eucalyptus latifolia</i>						U	U
MYRTACEAE	<i>Eucalyptus sp.</i> (seedlings)				G	G	G	G
MYRTACEAE	<i>Eucalyptus tectifica</i>						U	
MYRTACEAE	<i>Eucalyptus tetradonta</i>	Darwin Stringybark			U/G			
MORACEAE	<i>Ficus scobina</i>		M					
RUBIACEAE	<i>Gardenia megasperma</i>						M	M
PROTEACEAE	<i>Grevillea goodii</i>						G	
PROTEACEAE	<i>Grevillea decurrens</i>				M		M	
PROTEACEAE	<i>Grevillea parallela</i>							M/G
PROTEACEAE	<i>Grevillea refracta</i>				M			
PROTEACEAE	<i>Hakea arborescens</i>							M/G
POACEAE	<i>Heteropogon contortus</i>		G					
POACEAE	<i>Heteropogon triticeus</i>		G	G	G	G	G	G
MYRTACEAE	<i>Lophostemon lactifluus</i>		M	M				
MELIACEAE	<i>Owenia vernicosa</i>				M/G			
PANDANACEAE	<i>Pandanus spiralis</i>		M	M				

### Appendix 3 Fauna survey results

Family name	Species name	Common name	6A1	6A2	6B1	6B2	6C1	6C2
EUPHORBIACEAE	<i>Petalostigma quadriloculare</i>				G	M/G	G	G
LECYTHIDACEAE	<i>Planchonia careya</i>		G	G			G	
PROTEACEAE	<i>Persoonia falcata</i>				M		G	
COMBRETACEAE	<i>Terminalia ferdinandiana</i>				M/G		M/G	M/G
POACEAE	<i>Mnesithea rottboellioides</i>		G	G				
POACEAE	<i>Sarga sp.</i>			G	G		G	G
POACEAE	<i>Setaria apiculata</i>	Pigeon grass	G	G				
RUBIACEAE	<i>Spermacoce sp.</i>						G	G
MYRTACEAE	<i>Xanthostemon paradoxus</i>				M/G			
	<b>Other sub-dominant species</b>							
LAMIACEAE	* <i>Hyptis suaveolens</i>			G				
MIMOSACEAE	<i>Acacia sp.</i> (seedlings)						G	
POACEAE	<i>Alloteropsis semialata</i>						G	
RHAMNACEAE	<i>Alphitonia excelsa</i>	Red ash		G				
BIXACEAE	<i>Cochlospermum fraseri</i>				M			
CAESALPINIACEAE	<i>Erythrophleum chlorostachys</i>	Ironwood					U	
MYRTACEAE	<i>Eucalyptus latifolia</i>					U		
PROTEACEAE	<i>Grevillea pteridifolia</i>		M					
ARECACEAE	<i>Livistona humilis</i>				G		G	
POACEAE	<i>Sarga sp.</i>		G					

## Appendix 3 Fauna survey results

### Goromuru Survey Sites - Fauna

Family Name	Common name	Scientific name	2A1	2A2	2B1	2B2	2C1	2C2
			Total	Total	Total	Total	Total	Total
	<b>Frogs</b>							
BUFONIDAE	Cane Toad	<i>Bufo marinus</i>	7	3	23	6	1	19
HYLIDAE	Dwarf tree frog	<i>Litoria bicolor</i>					4	
HYLIDAE	Rocket Frog	<i>Litoria nasuta</i>	6	6	2	6	7	21
HYLIDAE		<i>Litoria rubella</i>						2
HYLIDAE		<i>Litoria tornieri</i>			1		2	
MYOBATRACHIDAE		<i>Crinia sp.</i>						1
MYOBATRACHIDAE		<i>Uperoleia lithomoda</i>	1					
	<b>Reptiles</b>							
AGAMIDAE	Two-Lined Dragon	<i>Diporiphora bilineata</i>	1	1				
BOIDAE	Water Python	<i>Liasis mackloti</i>			1			
COLUBRIDAE	Green/Common Tree Snake	<i>Dendrelaphis punctulata</i>	1					
COLUBRIDAE	Keelback	<i>Tropidonophis mairii</i>						4
GEKKONIDAE	Northern Dtella	<i>Gehyra australis</i>	1					
GEKKONIDAE	Prickly gecko	<i>Heteronotia binoei</i>		1				
GEKKONIDAE	Gecko	<i>Oedura rhombifer</i>		1			1	
SCINCIDAE	Skink	<i>Carlia gracilis</i>			2		1	3
SCINCIDAE	Skink	<i>Carlia longipes</i>	1	2	9			
SCINCIDAE	Skink	<i>Carlia munda</i>		4				
SCINCIDAE	Skink	<i>Cryptoblepharus plagiocephalus</i>	2				1	7
SCINCIDAE	Skink	<i>Ctenotus essingtonii</i>	1	1				
SCINCIDAE	Skink	<i>Ctenotus hilli</i>			1			
VARANIDAE	Spotted tree monitor	<i>Varanus scalaris</i>	1					
	<b>Birds</b>							
ACCIPITRIDAE	Brown Goshawk	<i>Accipiter fasciatus</i>			1			
ACCIPITRIDAE	White-bellied Sea-Eagle	<i>Haliaeetus leucogaster</i>			1			
ACCIPITRIDAE	Whistling Kite	<i>Haliastur sphenurus</i>		2	2		2	1
ACCIPITRIDAE	Black-breasted Buzzard	<i>Hamirostra melanosternon</i>		2				
ALCEDINIDAE	Azure Kingfisher	<i>Ceyx azurea</i>			1			
ANATIDAE	Wandering Whistling-duck	<i>Dendrocygna arcuata</i>		1				
ANHINGIDAE	Darter	<i>Anhinga melanogaster</i>			2			
ANSERANATIDAE	Magpie Goose	<i>Anseranas semipalmata</i>						21
ARTAMIDAE	Black-faced Woodswallow	<i>Artamus cinereus</i>		4				
ARTAMIDAE	White-breasted	<i>Artamus</i>	9		3		1	2

### Appendix 3 Fauna survey results

Family Name	Common name	Scientific name	2A1	2A2	2B1	2B2	2C1	2C2
			Total	Total	Total	Total	Total	Total
	Woodswallow	<i>leucorhynchus</i>						
ARTAMIDAE	Pied Butcherbird	<i>Cracticus nigrogularis</i>	1			1		
BURHINIDAE	Beach Stone-curllew	<i>Esacus neglectus</i>		1				
CACATUIDAE	Sulphur-crested Cockatoo	<i>Cacatua galerita</i>	4	1	1		2	
CAMPEPHAGIDAE	White-bellied Cuckoo-Shrike	<i>Coracina papuensis</i>		1			1	
CAPRIMULGIDAE	Spotted Nightjar	<i>Eurostopodus argus</i>	1					
CENTROPODIDAE	Pheasant Coucal	<i>Centropus phasianinus</i>	1		2		2	1
CLIMACTERIDAE	Black-tailed Treecreeper	<i>Climacteris melanura</i>		1				
COLUMBIDAE	Bar-shouldered Dove	<i>Geopelia humeralis</i>	1	4	3	1	4	6
COLUMBIDAE	Peaceful Dove	<i>Geopelia striata</i>	1	2	2	2	1	4
CORVIDAE	Torresian Crow	<i>Corvus orru</i>		1	1	2	4	2
DICAEIDAE	Mistletoebird	<i>Dicaeum hirundinaceum</i>	4	4			4	1
DICRURIDAE	Spangled Drongo	<i>Dicrurus bracteatus</i>	2	1	4			6
DICRURIDAE	Shining Flycatcher	<i>Myiagra alecto</i>	3		1			
DICRURIDAE	Leaden Flycatcher	<i>Myiagra rubecula</i>	2	1	2		1	1
DICRURIDAE	Willie Wagtail	<i>Rhipidura leucophrys</i>						1
DICRURIDAE	Northern Fantail	<i>Rhipidura rufiventris</i>	1		6		2	
HALCYONIDAE	Blue-winged Kookaburra	<i>Dacelo leachii</i>				1	1	
HALCYONIDAE	Forest Kingfisher	<i>Todiramphus macleayii</i>		2	1		3	1
HALCYONIDAE	Sacred Kingfisher	<i>Todiramphus sanctus</i>				1		
MALURIDAE	Red-backed Fairy-wren	<i>Malurus melanocephalus</i>					9	
MELIPHAGIDAE	Rufous-banded Honeyeater	<i>Conopophila albogularis</i>		1	1			
MELIPHAGIDAE	Rufous-throated Honeyeater	<i>Conopophila rufogularis</i>			1			
MELIPHAGIDAE	White-gaped Honeyeater	<i>Lichenostomus unicolor</i>			8		1	
MELIPHAGIDAE	Brown Honeyeater	<i>Lichmera indistincta</i>	3				4	7
MELIPHAGIDAE	Yellow-throated Miner	<i>Manorina flavigula</i>					1	
MELIPHAGIDAE	White-throated Honeyeater	<i>Melithreptus albogularis</i>	16	13	10	5	6	11
MELIPHAGIDAE	Dusky Honeyeater	<i>Myzomela obscura</i>	1		6		1	
MELIPHAGIDAE	Silver-crowned Friarbird	<i>Philemon argenticeps</i>	1					
MELIPHAGIDAE	Bar-breasted Honeyeater	<i>Ramsayornis fasciatus</i>	6		2			2
MEROPIDAE	Rainbow Bee-eater	<i>Merops ornatus</i>	3		2	7	2	2
ORIOLIDAE	Yellow Oriole	<i>Oriolus flavocinctus</i>			1			

### Appendix 3 Fauna survey results

Family Name	Common name	Scientific name	2A1	2A2	2B1	2B2	2C1	2C2
			Total	Total	Total	Total	Total	Total
PACHYCEPHALIDAE	Rufous Whistler	<i>Pachycephala rufiventris</i>	1	2		2	1	4
PARDALOTIDAE	Large-billed Gerygone	<i>Gerygone magnirostris</i>			3			
PARDALOTIDAE	White-throated Gerygone	<i>Gerygone olivacea</i>	1	2				
PARDALOTIDAE	Weebill	<i>Smicromis brevirostris</i>	1		2		1	
PASSERIDAE	Chestnut-breasted Mannikin	<i>Lonchura castaneothorax</i>				1		
PASSERIDAE	Yellow-rumped Mannikin	<i>Lonchura flaviprymna</i>				1		
PASSERIDAE	Crimson Finch	<i>Neochmia phaeton</i>	3			31	33	
PASSERIDAE	Double-barred Finch	<i>Taeniopygia bichenovii</i>			1			
PETROICIDAE	Lemon-bellied Flycatcher	<i>Microeca flavigaster</i>	2		1		3	4
PHASIANIDAE	Brown Quail	<i>Coturnix ypsilophora</i>				2	3	
PSITTACIDAE	Red-winged Parrot	<i>Aprosmictus erythropterus</i>	2					
PSITTACIDAE	Varied Lorikeet	<i>Psitteuteles versicolor</i>	1					
PSITTACIDAE	Rainbow Lorikeet	<i>Trichoglossus haematodus</i>		1	5		14	
PTILONORHYNCHIDAE	Great Bowerbird	<i>Chlamydera nuchalis</i>			1			
STRIGIDAE	Southern Boobook	<i>Ninox novaeseelandiae</i>		1				1
SYLVIIDAE	Golden-headed Cisticola	<i>Cisticola exilis</i>				2		
SYLVIIDAE	Tawny Grassbird	<i>Megalurus timoriensis</i>			1			
	<b>Mammals</b>							
CANIDAE	Dingo	<i>Canis lupus</i>					1	
DASYURIDAE	Red-cheeked dunnart	<i>Sminthopsis virginiae</i>			1			
MACROPODIDAE	Agile wallaby	<i>Macropus agilis</i>		1	1	1	1	2
MACROPODIDAE	Wallaroo (scats)	<i>Macropus sp.</i>				1		
MURIDAE	Water rat	<i>Hydromys chrysogaster</i>			1			
MURIDAE	Grassland Melomys	<i>Melomys burtoni</i>	4		18		1	
PTEROPODIDAE	Black flying-fox	<i>Pteropus alecto</i>	1					
	<b>Ferals</b>							
BOVIDAE	Buffalo	<i>Bubalus bubalis</i>						1

## Appendix 3 Fauna survey results

### Goromuru Survey Sites - Flora

Family name	Species name	Common name	2A1	2A2	2B1	2B2	2C1	2C2
	<i>Dominant</i>							
ANACARDIACEAE	<i>Buchanania obovata</i>	Green Plum		G				
BLECHNACEAE	<i>Blechnum orientale</i>				G			
CAESALPINIACEAE	<i>Erythrophleum chlorostachys</i>	Ironwood	U/M				U/M	
CYCADACEAE	<i>Cycas orientis</i>		M	M			M	
CYPERACEAE	<i>Scleria ciliaris</i>				G			
DILLENACEAE	<i>Hibbertia dealbata</i>						G	
DILLENACEAE	<i>Hibbertia sp.</i>			G				
EUPHORBIACEAE	<i>Antidesma ghesaembilla</i>		M	M	M			
LECYTHIDACEAE	<i>Planchonia careya</i>						M	
LYGODIACEAE	<i>Lygodium microphyllum</i>				G			
MYRTACEAE	<i>Corymbia polysciada</i>			U				
MYRTACEAE	<i>Corymbia polycarpa</i>						U	
MYRTACEAE	<i>Eucalyptus bigalerita</i>						U	
MYRTACEAE	<i>Eucalyptus tetrodonta</i>		U	U				
MYRTACEAE	<i>Melaleuca dealbata</i>				U			U
MYRTACEAE	<i>Melaleuca leucadendra</i>				U			U
PANDANACEAE	<i>Pandanus spiralis</i>				M		M	
PHILYDRACEAE	<i>Philydrum lanuginosum</i>				G			G
POACEAE	<i>Eragrostis concinna</i>					G		
POACEAE	<i>Eriachne pallescens</i>					G		
POACEAE	<i>Heteropogon contortus</i>			G			G	G
POACEAE	<i>Mnesithea rottboellioides</i>					G		
POACEAE	<i>Sarga sp.</i>		G	G			G	
POACEAE	<i>Themeda triandra</i>		G	G				
PROTEACEAE	<i>Banksia dentata</i>						M	
PROTEACEAE	<i>Grevillea heliosperma</i>						M	
PROTEACEAE	<i>Grewia refusiblia</i>		G					
PROTEACEAE	<i>Hakea arborescens</i>						M	
RUBIACEAE	<i>Pogonolobus reticulatus</i>			G				
RUBIACEAE	<i>Pogonolobus reticulatus</i>						G	
RUBIACEAE	<i>Spermacoce stenophylla</i>			G				
STERCULIACEAE	<i>Brachychiton megaphyllus</i>		G					
TILIACEAE	<i>Grewia retusifolia</i>			G				
VITACEAE	<i>Ampelocissus</i>			G			G	

### Appendix 3 Fauna survey results

Family name	Species name	Common name	2A1	2A2	2B1	2B2	2C1	2C2
	<i>acetosa</i>							
	<b>Other sub-dominant species</b>							
ACANTHACEAE	<i>Brunoniella australis</i>		G					
ANACARDIACEAE	<i>Buchanania sp.</i>		G					
APOCYNACEAE	<i>Alstonia actinophylla</i>			U	U			
BURSERACEAE	<i>Canarium australianum</i>		M/G					
CAESALPINIACEAE	<i>Chamaecrista mimosoides</i>					G		
CAESALPINIACEAE	<i>Erythrophleum chlorostachys</i>	Ironwood		U				
COMBRETACEAE	<i>Terminalia carpentariae</i>		M/G					
COMBRETACEAE	<i>Terminalia ferdinandiana</i>		U					
COMBRETACEAE	<i>Terminalia pterocarya</i>			G				
DIOSCOREACEAE	<i>Dioscorea transversa</i>		G	G				
EUPHORBIACEAE	<i>Antidesma ghesaembilla</i>						M	
EUPHORBIACEAE	<i>Euphorbia alsiniflora</i>					G		
EUPHORBIACEAE	<i>Petalostigma pubescens</i>			G				
EUPHORBIACEAE	<i>Petalostigma quadriloculare</i>		G					
EUPHORBIACEAE	<i>Sebastiania chamaelea</i>			G				
LECYTHIDACEAE	<i>Planchonia careya</i>		G	M			M	
MYRTACEAE	<i>Corymbia latifolia</i>			U				
MYRTACEAE	<i>Corymbia confertiflora</i>		U					
MYRTACEAE	<i>Corymbia ferruginea</i>			M/G				
MYRTACEAE	<i>Corymbia polycarpa</i>		U					
MYRTACEAE	<i>Eucalyptus miniata</i>			G				
MYRTACEAE	<i>Lophostemon lactifluus</i>				U		U	
MYRTACEAE	<i>Melaleuca dealbata</i>					U		
MYRTACEAE	<i>Melaleuca nervosa</i>							U
OLEACEAE	<i>Jasminum aemulum</i>			G				
PANDANACEAE	<i>Pandanus spiralis</i>			G				
PANDANACEAE	<i>Pandanus spiralis</i>		G					
POACEAE	<i>Eragrostis sp. (latram)</i>			G				
POACEAE	<i>Eriachne sp.</i>			G				
POACEAE	<i>Ischaemum sp.</i>					G		
PROTEACEAE	<i>Grevillea heliosperma</i>			M				
PROTEACEAE	<i>Grevillea striata</i>			M				
PROTEACEAE	<i>Persoonia falcata</i>						M	

### Appendix 3 Fauna survey results

Family name	Species name	Common name	2A1	2A2	2B1	2B2	2C1	2C2
RHAMNACEAE	<i>Alphitonia excelsa</i>				U		M	
RUBIACEAE	<i>Pogonolobus reticulatus</i>		G					
RUBIACEAE	<i>Timonius timon</i>				U			
STERCULIACEAE	<i>Brachychiton diversifolius</i>			U/M				
STERCULIACEAE	<i>Brachychiton megaphyllus</i>	Red-flowered Kurrajong		G			G	
VERBENACEAE	<i>Premna acuminata</i>		G					
VERBENACEAE	<i>Vitex acuminata</i>		M					

## Appendix 3 Fauna survey results

### Latram River Survey Sites - Fauna

Family Name	Common name	Scientific name	1A1	1A2	1B1	1B2	1C1	1C2
			Total	Total	Total	Total	Total	Total
	<b>Frogs</b>							
BUFONIDAE	Cane Toad	<i>Bufo marinus</i>		1			1	
HYLIDAE	Dwarf tree frog	<i>Litoria bicolor</i>	1					
HYLIDAE	Rocket Frog	<i>Litoria nasuta</i>	1					
HYLIDAE		<i>Litoria rothii</i>					1	
HYLIDAE		<i>Litoria tornieri</i>	1					
HYLIDAE	Wotjulum Frog	<i>Litoria wotjulumensis</i>	1				2	
MYOBATRACHIDAE	Ornate burrowing frog	<i>Limnodynastes ornatus</i>					1	
MYOBATRACHIDAE	Marbled frog	<i>Limnodynastes convexiusculus</i>	2					
MYOBATRACHIDAE		<i>Uperoleia lithomoda</i>	1				1	
	<b>Reptiles</b>							
AGAMIDAE	Gilberts Dragon	<i>Lophognathus gilberti</i>	1	1		1		
GEKKONIDAE	Prickly gecko	<i>Heteronotia binoei</i>						3
GEKKONIDAE	Gecko	<i>Oedura rhombifer</i>			1			1
GEKKONIDAE	Marbled Velvet Gecko	<i>Oedura marmorata</i>			1			
SCINCIDAE	Skink	<i>Carlia amax</i>			3			1
SCINCIDAE	Skink	<i>Carlia longipes</i>				3	4	
SCINCIDAE	Skink	<i>Carlia munda</i>	2	3	2	1		1
SCINCIDAE	Skink	<i>Cryptoblepharus plagiocephalus</i>	3	1		1		
SCINCIDAE	Skink	<i>Ctenotus essingtonii</i>	3			2		
SCINCIDAE	Skink	<i>Glaphyromorphus nigricaudis</i>					2	
SCINCIDAE	MacFarlane's Lerista	<i>Lygisaurus macfarlani</i>	1				4	
VARANIDAE	Spotted tree monitor	<i>Varanus scalaris</i>		1				1
VARANIDAE		<i>Varanus sp.</i>					1	
	<b>Birds</b>							
AEGOTHELIDAE	Australian Owlet-nightjar	<i>Aegotheles cristatus</i>	1					
ALCEDINIDAE	Azure Kingfisher	<i>Ceyx azurea</i>					1	
ARTAMIDAE	White-breasted Woodswallow	<i>Artamus leucorhynchus</i>				4		
ARTAMIDAE	Pied Butcherbird	<i>Cracticus nigrogularis</i>	3		3	1		2
CACATUIDAE	Sulphur-crested Cockatoo	<i>Cacatua galerita</i>	1					1
CAMPEPHAGIDAE	White-bellied Cuckoo-Shrike	<i>Coracina papuensis</i>	3	5				
COLUMBIDAE	Bar-shouldered Dove	<i>Geopelia humeralis</i>	6		4	6	4	1
COLUMBIDAE	Peaceful Dove	<i>Geopelia striata</i>	3				2	
DICAEIDAE	Mistletoebird	<i>Dicaeum</i>				1		

### Appendix 3 Fauna survey results

Family Name	Common name	Scientific name	1A1	1A2	1B1	1B2	1C1	1C2
			Total	Total	Total	Total	Total	Total
		<i>hirundinaceum</i>						
DICRURIDAE	Spangled Drongo	<i>Dicrurus bracteatus</i>				1	7	
DICRURIDAE	Leaden Flycatcher	<i>Myiagra rubecula</i>		2			3	
DICRURIDAE	Rufous Fantail	<i>Rhipidura rufifrons</i>					1	
DICRURIDAE	Northern Fantail	<i>Rhipidura rufiventris</i>	1	1			2	2
HALCYONIDAE	Blue-winged Kookaburra	<i>Dacelo leachii</i>						2
HALCYONIDAE	Forest Kingfisher	<i>Todiramphus macleayii</i>				1		1
MALURIDAE	Red-backed Fairy-wren	<i>Malurus melanocephalus</i>	2					
MEGAPODIIDAE	Orange-footed Scrubfowl	<i>Megapodius reinwardt</i>					2	
MELIPHAGIDAE	Brown Honeyeater	<i>Lichmera indistincta</i>	7			2		1
MELIPHAGIDAE	Yellow-throated Miner	<i>Manorina flavigula</i>	9	1	2	4		2
MELIPHAGIDAE	White-throated Honeyeater	<i>Melithreptus albogularis</i>	10	9	4	26	3	10
MELIPHAGIDAE	Dusky Honeyeater	<i>Myzomela obscura</i>	1			2	2	
MELIPHAGIDAE	Silver-crowned Friarbird	<i>Philemon argenticeps</i>	9	6	4	2		6
MELIPHAGIDAE	Little Friarbird	<i>Philemon citreogularis</i>	1					
MELIPHAGIDAE	Tawny-breasted Honeyeater	<i>Xanthotis flaviventer</i>	1					
MEROPIDAE	Rainbow Bee-eater	<i>Merops ornatus</i>	2	5		1		
PACHYCEPHALIDAE	Rufous Whistler	<i>Pachycephala rufiventris</i>		3		3		7
PACHYCEPHALIDAE	Grey Whistler	<i>Pachycephala simplex</i>					1	
PARDALOTIDAE	White-throated Gerygone	<i>Gerygone olivacea</i>				1		
PARDALOTIDAE	Striated Pardalote	<i>Pardalotus striatus</i>	2					
PARDALOTIDAE	Weebill	<i>Smicromis brevirostris</i>	3	4		9		
PSITTACIDAE	Red-winged Parrot	<i>Aprosmictus erythropterus</i>		3		1		2
PSITTACIDAE	Northern Rosella	<i>Platycercus venustus</i>				2		
PSITTACIDAE	Varied Lorikeet	<i>Psitteuteles versicolor</i>	5	4		3		
PSITTACIDAE	Rainbow Lorikeet	<i>Trichoglossus haematodus</i>	4		1	4		1
PTILONORHYNCHIDAE	Great Bowerbird	<i>Chlamydera nuchalis</i>	3			2	1	
STRIGIDAE	Southern Boobook	<i>Ninox novaeseelandiae</i>	1					
	<b>Mammals</b>							
MACROPODIDAE	Agile wallaby	<i>Macropus agilis</i>		1				
MURIDAE	Grassland Melomys	<i>Melomys burtoni</i>	3				6	
MURIDAE	House Mouse	<i>Mus musculus</i>					4	

### Appendix 3 Fauna survey results

Family Name	Common name	Scientific name	1A1	1A2	1B1	1B2	1C1	1C2
			Total	Total	Total	Total	Total	Total
PTEROPODIDAE	Black flying-fox	<i>Pteropus alecto</i>						4
	<b>Ferals</b>							
BOVIDAE	Buffalo	<i>Bubalus bubalis</i>		1		1		

## Appendix 3 Fauna survey results

### Latram River Survey Sites - Flora

Family name	Species name	Common name	1A1	1A2	1B1	1B2	1C1	1C2
	<i>Dominant</i>							
ANACARDIACEAE	<i>Buchanania obovata</i>	Green Plum		G	G	G		
ARECACEAE	<i>Hydriastele wendlandiana</i>						M	
ARECACEAE	<i>Livistona humilis</i>			M	M	M		M
ASTERACEAE	<i>Silver leaf herb (unidentifiable)</i>					G		
CAESALPINIACEAE	<i>Chamaecrista mimosoides</i>							G
CAESALPINIACEAE	<i>Erythrophleum chlorostachys</i>	Ironwood						
CLUSIACEAE	<i>Calophyllum sil</i>						U/M	
COMBRETACHEAE	<i>Terminalia canescens</i>							
CONVOLVULACEAE	<i>Ipomoea graminea</i>			G				G
DILLENACEAE	<i>Dillenia alata</i>						M	
DILLENACEAE	<i>Hibbertia dealbata</i>		G	G	G			G
DILLENACEAE	<i>Hibbertia oblongata</i>							G
DILLENACEAE	<i>Hibbertia sp.</i>			G				G
EUPHORBIACEAE	<i>Breynia cernua</i>						M	
EUPHORBIACEAE	<i>Drypetes deplanchei</i>						M	
EUPHORBIACEAE	<i>Macaranga involucrata</i>						M	
EUPHORBIACEAE	<i>Petalostigma pubescens</i>			G				
EUPHORBIACEAE	<i>Petalostigma quadriloculare</i>				G	G		G
FABACEAE	<i>Bossiaea bossiaeooides</i>				G			
LECYTHIDACEAE	<i>Barringtonia acutangula</i>						M	
LILIACEAE	<i>Dianella odorata</i>						G	
LYGODIACEAE	<i>Lygodium microphyllum</i>						G	
MELIACEAE	<i>Owenia vernicosa</i>							
MIMOSACEAE	<i>Acacia aulacocarpa</i>					U		M
MIMOSACEAE	<i>Acacia auriculiformis</i>							
MIMOSACEAE	<i>Acacia leptocarpa</i>		M			M		M
MIMOSACEAE	<i>Acacia sublanata</i>			M				
MYRTACEAE	<i>Corymbia latifolia</i>							
MYRTACEAE	<i>Corymbia polycarpa</i>							
MYRTACEAE	<i>Eucalyptus camaldulensis</i>							
MYRTACEAE	<i>Eucalyptus miniata</i>							U
MYRTACEAE	<i>Eucalyptus</i>							

### Appendix 3 Fauna survey results

Family name	Species name	Common name	1A1	1A2	1B1	1B2	1C1	1C2
	<i>polysciada</i>							
MYRTACEAE	<i>Eucalyptus tectifica</i>		M					
MYRTACEAE	<i>Eucalyptus tetradonta</i>		U	U	U/G	U/G		U/G
MYRTACEAE	<i>Lophostemon lactifluus</i>		U				U	
MYRTACEAE	<i>Melaleuca argentea</i>		U					
MYRTACEAE	<i>Melaleuca viridiflora</i>							
ONAGRACEAE	<i>Ludwigia octovalvis</i>			G				
PANDANACEAE	<i>Pandanus aquaticus</i>						M	
PANDANACEAE	<i>Pandanus spiralis</i>		M				M	
POACEAE	<i>Aristida holathera</i>							
POACEAE	<i>Arundinella nepalensis</i>							
POACEAE	<i>Eriachne burkittii</i>		G					
POACEAE	<i>Eriachne sp.</i>		G					
POACEAE	<i>Heteropogon contortus</i>		G	G		G		G
POACEAE	<i>Sarga intrans</i>	Darwin Canegrass						
POACEAE	<i>Schizachyrium sp.</i>			G				
POACEAE	<i>Themeda triandra</i>					G		
PROTEACEAE	<i>Banksia dentata</i>		M					
PROTEACEAE	<i>Grevillea pteridifolia</i>		M	M				
PROTEACEAE	<i>Hakea arborescens</i>			G		M		
RHAMNACEAE	<i>Alphitonia excelsa</i>						U	
RUBIACEAE	<i>Spermacoce sp.</i>				G			
SAPOTACEAE	<i>Pouteria sericea</i>						M	
SMILACACEAE	<i>Smilax australis</i>						G	
STERCULIACEAE	<i>Helicteres cana</i>		G	G		G		G
	<b>Other</b>							
ANACARDIACEAE	<i>Buchanania arborescens</i>						M	
ANACARDIACEAE	<i>Buchanania obovata</i>	Green Plum						M
BURSERACEAE	<i>Canarium australianum</i>						M	
CAESALPINIACEAE	<i>Chamaecrista mimosoides</i>					G		G
CONVOLVULACEAE	<i>Ipomoea graminea</i>					G		
DILLENACEAE	<i>Hibbertia oblongata</i>				G			
DILLENACEAE	<i>Hibbertia sp.</i>				G			
DILLENACEAE	<i>Pachynema sp.</i>			G				

### Appendix 3 Fauna survey results

Family name	Species name	Common name	1A1	1A2	1B1	1B2	1C1	1C2
EUPHORBIACEAE	<i>Petalostigma quadriloculare</i>		G					
FABACEAE	<i>Bossiaea bossiaeoides</i>		G			G		
FABACEAE	<i>Gompholobium subulatum</i>			G				
FABACEAE	<i>Tephrosia brachyodon</i>					G		
FABACEAE	<i>Tephrosia brachyodon</i>			G				
GOODENIACEAE	<i>Goodenia sp.</i>							G
HALORAGACEAE	<i>Gonocarpus leptothecus</i>					G		
HALORAGACEAE	<i>Gonocarpus leptothecus</i>			G		G		
LILIACEAE	<i>Protasparagus racemosus</i>							G
LINDSAEACEAE	<i>Lindsaea ensifolia</i>		G					
MIMOSACEAE	<i>Acacia aulacocarpa</i>							U
MIMOSACEAE	<i>Acacia auriculiformis</i>			M				
MYRISTICACEAE	<i>Horsfieldia australiana</i>						U	
MYRTACEAE	<i>Corymbia polycarpa</i>					M		
MYRTACEAE	<i>Eucalyptus miniata</i>			U				
MYRTACEAE	<i>Eucalyptus miniata</i>				M	M		
MYRTACEAE	<i>Melaleuca nervosa</i>						U	
MYRTACEAE	<i>Syzygium fibrosum</i>						U	
PANDANACEAE	<i>Pandanus spiralis</i>			G				
PANDANACEAE	<i>Pandanus spiralis</i>							G
POACEAE	<i>Heteropogon contortus</i>					G		
POACEAE	<i>Ischaemum sp.</i>						G	
POACEAE	<i>Schizachyrium sp.</i>					G		
PROTEACEAE	<i>Grevillea heliosperma</i>							M
PROTEACEAE	<i>Grevillea pteridifolia</i>						M	
PROTEACEAE	<i>Grevillea dryandri</i>					G		
PROTEACEAE	<i>Grevillea goodii</i>					G	G	G
PROTEACEAE	<i>Persoonia falcata</i>			G	G	M		M
RHIZOPHORACEAE	<i>Carallia brachiata</i>						M	
SCROPHULARIACEAE	<i>Buchnera asperata</i>					G		G
STERCULIACEAE	<i>Brachychiton megaphyllus</i>	Red-flowered Kurrajong						M
VITACEAE	<i>Ampelocissus acetosa</i>							G