

24 Fauna

24.1 Introduction

The conservation of existing fauna is a key objective of the project. This section outlines the existing fauna in the region and the way it will be managed during the planning, design, construction and operational phases of the Northern Expressway.

The majority of fauna species in the study area is likely to experience minimal environmental effects given that modification and loss of habitat in the wider region and study area have already occurred. Further habitat fragmentation from both a flora and fauna perspective is likely to occur with the clearance of some isolated areas of vegetation. Given the already degraded nature of the environment, this is unlikely to seriously affect the fauna of the region. Revegetation along the length of the proposed Northern Expressway is likely to have a positive impact for many faunal groups and species. No significant adverse effect on fauna in the region is anticipated as a result of the proposed Northern Expressway.

24.2 Legislative and policy requirements

24.2.1 National

Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) provides for the protection and conservation of matters of national environmental significance, and for the management of Australian Government-owned and controlled areas. Approval from the Australian Government Minister for Environment and Water Resources is required for any action that will have a significant impact on a matter of national environmental significance.

Based on detailed environmental investigations undertaken in accordance with the Australian Government's EPBC Act Policy Statement 1.1 Significant Impact Guidelines (DEH 2006) it has been determined that the project will not have a significant impact on any matter of national environmental significance and therefore no referral under the EPBC Act has been made.

24.2.2 State

National Parks and Wildlife Act 1972

The *National Parks and Wildlife Act 1972* (NPW Act) provides for the conservation of wildlife in a natural environment at a State level. Schedules 7, 8 and 9 respectively list species classified as endangered, vulnerable and rare. Application to the South Australian Government Minister for Environment and Conservation is required under the Act for activities that are likely to interfere with listed species and their habitat.

A search of the fauna databases maintained by the South Australian Department for Environment and Heritage and the South Australian Museum indicated that 28 fauna species with a State conservation rating have been previously recorded in the general area of the site.

Native Vegetation Act 1991

The *Native Vegetation Act 1991* and Regulations protect and control the clearance of South Australia's native vegetation. One of the provisions of this Act is that native vegetation clearance may not be approved if it provides habitat for threatened native fauna. This Act applies to the project area along and north of the Gawler River.

Natural Resources Management Act 2004

The *Natural Resources Management Act 2004* (NRM Act) repeals the *Animal and Plant Control (Agricultural Protection and Other Purposes) Act 1986*, the *Soil Conservation and Land Care Act 1997* and the *Water Resources Act 1997* and incorporates the functional requirements of these Acts. The NRM Act establishes provisions for the management of the State's natural resources, including pest plants and animals, and the land and water resources.

No Species Loss A Biodiversity Strategy for South Australia 2006–2016 (draft)

The South Australian Government policy, *No Species Loss A Biodiversity Strategy for South Australia 2006–2016* (draft) is undergoing public review. While still a draft document, it will be the key policy for protection of biodiversity in South Australia and is applicable to the project.

24.3 Assessment methodology

The fauna assessment included the following investigations:

- a literature review of previous investigations in the area
- a search of fauna database records from local, South Australian and Australian governments
- field surveys targeting specific faunal groups including:
 - crepuscular and nocturnal fauna (species which are active at dusk, dawn and night)
 - insectivorous bats
 - birds, including diurnal and seasonal variation
 - amphibians
- consultation with South Australian Government groups and local council officers.

24.4 Existing environment

For biological matters, past conditions, especially the distribution of native vegetation, are as important as those currently existing or influencing the distribution of habitat and species. Therefore, this section discusses both past and present information relevant to the distribution of fauna.

24.4.1 Conditions within the study area**Current land use**

Horticulture and intensive agriculture, and residential, retail and industrial developments characterise the past and existing land uses in the study area and region. The largest land uses in the area include

horticulture, livestock grazing and housing. Little or no remnant native vegetation remains in most of the region.

The current vegetation mostly consists of introduced plant species, including weeds, in a highly modified environment, with occasional indigenous plants as individuals or small patches along roadsides. Some larger areas of native vegetation can be found on private land and along roadsides. Little remnant overstorey vegetation occurs in the southern and central sections of the study area. Areas around the Gawler River contain tall eucalypt-dominated woodland and the Reeves Plain region includes mallee and native pines on the plains and dunes north of the Gawler River.

Pre-European settlement vegetation communities

A summary of the pre-European settlement vegetation communities is included in Part D, Section 23. They include river redgum woodland, mallee box woodland, native grasslands and low shrublands.

24.4.2 Fauna habitats in the study area

The poor condition of much of the remaining areas of native vegetation is considered to provide low quality fauna habitat.

Table 24.1 details the habitat value, from a fauna perspective, of each of the different habitat types present within the study area. The woodlands and forest along the Gawler River and the scrubland and woodland north of the Expressway alignment have the highest habitat value within the northern region of the study area.

These woodlands contain large, mature river red gums many of which contain hollows and all of which have canopy characteristics suitable for use by different faunal groups and species. These provide suitable habitat for roosting, resting and breeding by many common fauna species, such as Australian magpie, musk lorikeet, Gould's wattled bat, possums and raptors (birds of prey). Debris from the river red gums would provide microhabitats for reptile species. The majority of frog species previously recorded within the region may also continue to occur here.

Small patches of mallee box woodland, mallee scrubland, native pine forest and woodland also occur within the region and study area north of the Gawler River. While these habitats are degraded, they offer habitat variety for fauna species. It is likely that the majority of the fauna using these areas are common species, and a more diverse ground fauna would be expected to occur.

Table 24.1

Habitat value within the study area

| Habitat type | Habitat value |
|---|----------------------|
| River red gum woodland (Gawler River) | Moderate to high |
| Mallee box woodland (Peachey Belt, between Penfield, Angle Vale and Virginia) | Low to moderate |
| Remnant native grasslands (between Parafield and Paralowie) | Low |
| Mallee scrubland and native pine woodland (north of alignment) | Moderate to high |
| Wetlands | Low |
| Cropping and grazing land | Low |
| Planted vegetation | Low to moderate |

A large proportion of the remaining study area is extensively cleared of native vegetation, and is of low quality as habitat for native fauna. The diversity of the species present is predicted to be much lower than that in the Gawler River woodland area.

24.4.3 Fauna species recorded in the study area

Lists of all fauna species recorded or predicted to occur in the study area are available in the *Fauna Technical Paper*.

Mammals

There is minimal habitat available for larger mammals, especially south of the Gawler River. Most of the woodland in this region has been removed for agricultural purposes and only isolated fragments remain.

With the exception of bats, mammal diversity and numbers were consequently low. Native mammal diversity was limited to western grey kangaroo, common ringtail possum, common brushtail possum and echidna. Seven common bat species were present in the study area, primarily around woodlands of the Gawler River.

The introduced red fox and cat were recorded in the region. These species are predators of native and introduced species. European rabbit, brown hare, black rat, brown rat and house mouse were also present; these species compete with native species for food, shelter and other resources.

The southern brown bandicoot (nationally endangered) could possibly occur in the region, although it is unlikely due to the lack of suitable habitat.

Three mammal species of State conservation significance (listed under the *National Parks and Wildlife Act 1972*) have been previously recorded within the study area; yellow-bellied sheath-tail bat, southern free-tail bat, and koala. Yellow-bellied sheath-tail bat has been recorded as recently as 2000. Due to the apparent low numbers of the species in South Australia, the proposed Northern Expressway is unlikely to have a significant effect on this species.

The southern free-tail bat potentially occurs within the Gawler River area, roosting in river red gums and feeding on insects over the river and other water sources. The latest recording of the southern free-tail bat was during a bat survey of the Gawler River and surrounds in 2005.

Koala may be present and it is possible that this species would utilise the river red gum woodland areas within the study area.

Birds

A total of 46 bird species were identified during the survey. Based on database searches of recent bird observation records for the Australian Bird Atlas project, it is likely that about 70 bird species would inhabit or use this area, primarily during spring and summer. Introduced bird species, especially feral pigeon and common starling, were the most commonly recorded species.

Migratory and nationally significant species

A number of bird species of national conservation significance possibly occur within the region of the project site. The following species of national conservation significance have been previously recorded within the region: shy albatross, mallee fowl and plains wanderer, the spotted quail thrush and regent honeyeater, and the rainbow bee-eater.

The rainbow bee-eater is a migrant to the region from about September to April and inhabits various habitats including woodlands, plains and riparian areas. A bird survey of the Gawler River did not record the species. No nesting sites were obvious and no vagrant birds were recorded at the time of the survey or during spring and summer 2006–2007.

Field observations confirm that the migratory species grey teal, wedge-tailed eagle, brown falcon, whistling kite, little eagle, black kite and Australian hobby are present in the region, having occasionally been recorded in the study area. The black falcon is still present in the wider region, with sightings of the species made about 20 km north of the study area. Observations also indicate that other migratory species wood duck, brown goshawk, black-shouldered kite and nankeen kestrel are breeding in the region (primarily north of the Gawler River).

State conservation significance

A number of bird species of State conservation significance (listed under the *National Parks and Wildlife Act 1972*) were identified as possibly occurring in the study area. It is unlikely that any of these species would occur within the proposed Northern Expressway route, the exception being the Australasian bittern that occurs in the Greenfields wetland complex (Part E, Section 39).

The peregrine falcon predominantly nests on cliff and rock faces. However, this species can utilise breeding habitat in tall trees and on buildings. It is known to utilise the open areas of the site for feeding on rodents, reptiles and, especially, small birds. The species has been recently recorded in the wider region as a breeding pair on RAAF Base Edinburgh in 2004 and as individual birds feeding on pigeons, including along Angle Vale Road. Due to the large territory used by this species, it is unlikely that they will be adversely affected by the proposal.

The striped honeyeater prefers woodland and forest habitat, including mallee, and may therefore utilise the woodland along the Gawler River or other native woodland areas in the northern section of the study area. However, this species has not been observed in the area since 1984 and is unlikely to be impacted upon by the proposal.

The remnant vegetation communities of the Gawler River represent an important habitat for local bird species, including as a migration corridor. There are numerous nesting and roosting sites within the river red gum community, which is the only overstorey species recorded at these sites.

Reptiles

A number of reptile species are likely to be present in the region, including the sand goanna (monitor), which is still relatively common north of the Gawler River, and the eastern tiger snake, which has been recorded around Gawler (Pastock et al. 1998).

The Flinder's worm-lizard has a national rating of Vulnerable under the EPBC Act and was last recorded in 1993. The pygmy blue-tongue lizard, listed as Critically Endangered under the EPBC Act, originally occurred in the region, though the last record of the species in Adelaide was 1959. These species are unlikely to occur in the project area.

Two reptile species with a State conservation rating have been recorded within the region of the project site. The heath goanna (*Varanus rosenbergi* [Rare]) inhabits coastal heaths, woodlands, mallee and forests (Cogger 1994). The species is more likely to occur within the conservation parks east and south of the study area. Sand (Gould's) goanna is present in the northern section of the study area.

Amphibians

A number of amphibian species were recorded in the study area including the brown froglet, eastern pobblebonk, bull frog, spotted marsh frog and brown tree frog. The painted frog is expected to occur within the study area and brown toadlet may still be present. The brown froglet and spotted marsh frog were common and present in most drains, watercourses, ephemeral wetlands and roadside areas which held water. Brown tree frogs were relatively common in the Gawler River woodlands.

Fish records are sparse for the region, although recent data indicate that three native fish species have been recorded in the Gawler River near Virginia.

Aquatic macro-invertebrates

Macro-invertebrates (or water bugs) can provide a good indication of overall aquatic habitat quality.

A total of 41 macro-invertebrate taxa were identified across the whole study area. The Gawler River confluence and the North Para River (both in the northern portion of the region) recorded the highest macro-invertebrate diversity. The most commonly recorded taxa throughout were non-biting midge larvae (Chironomidae), and water boatmen (Corixidae).

A disproportionate number of the macro-invertebrate species identified are known to be tolerant or very tolerant of poor water quality. This was not unexpected given the intensive agricultural practices which occur around the Gawler and North Para rivers in the northern portion of the study area.

24.5 Effects of the proposed Northern Expressway on the existing environment

24.5.1 Birds

Trees in the area represent a food source for common bird species and introduced pest species and are also used for roosting and nesting.

Any vegetation removal will impact on bird species using those habitats. However, the Northern Expressway route predominantly passes through previously cleared, low fauna habitat value areas which are unlikely to provide significant habitat for any bird species of conservation significance. Additionally, a Landscape Management Plan aims to address the potential habitat loss associated with construction.

24.5.2 Mammals, amphibians and reptiles

Due to the small populations of common species, the project is likely to have negligible adverse effects on these groups.

24.5.3 Aquatic macro-invertebrates

Potential effects upon macro-invertebrate communities and on broader aquatic habitat health in general are possible during the construction and ongoing operation of the proposed Northern Expressway Project. The main effects could arise via:

- habitat loss by removal of riparian vegetation
- reduction in water quality, for example, from increased sediment load entering waterways, or from pollutants entering waterways.

24.6 Environmental management

24.6.1 General principles adopted to minimise effects

General principles adopted to minimise the effect of the proposed Northern Expressway on fauna include:

- avoiding or minimising impacts on fauna species and habitat through all the planning, design, construction and operation phases
- providing a significant environmental benefit for any habitat requiring removal.

24.6.2 Measures to minimise effects during construction

Measures proposed to minimise potential effects of construction on fauna include:

- identifying any potential habitat areas as part of the detailed vegetation survey of the entire alignment
- briefing all construction and site staff working on the project of areas of importance
- searching for and trapping fauna prior to revegetation removal so that individuals can be relocated
- inspecting hollows, prior to vegetation removal to ensure no fauna are present
- ensuring that habitat disturbance is minimised during construction activities
- locating and flagging sensitive habitat areas for avoidance
- implementing soil erosion and drainage management measures to prevent sediments or pollutants from entering waterways.

24.6.3 Measures to minimise effects during operation

Appropriate actions to minimise potential effects on aquatic habitat during operation of the proposed Northern Expressway include but are not limited to the following:

- re-establishing vegetation within the road reserves
- ongoing maintenance of soil erosion and drainage management measures
- minimising the use of herbicides along roadsides, particularly in close proximity to creek lines and waterways.

24.7 Conclusion

The Northern Expressway passes through previously cleared land with little or no vegetation. Consequently, there are few areas which represent good habitat for faunal species.

Some small areas of remaining vegetation which provide habitat for faunal species may require removal, such as around the Gawler River.

A comprehensive landscape management plan will be prepared and will provide a significant environmental benefit for any habitat requiring removal.

The project will not have a significant effect on any matter of national environmental significance and therefore no referral under the EPBC Act has been made.

