

CASE STUDY

PAKENHAM EAST DEPOT FLORA AND FAUNA MANAGEMENT





Downer took ownership of a greenfield site in Pakenham East in 2016 to commence construction of the state-of-the-art maintenance depot for Melbourne's new High Capacity Metro Trains. The construction of the site was also undertaken by Downer and was completed in 2018.

As both a greenfield site, and through the ongoing operations on the 118 hectare site, several flora and fauna have been identified as endangered and vulnerable by the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC), including:

Species	Latin name	Status
Growling Grass Frog	<i>Litoria raniformis</i>	Vulnerable
Southern Brown Bandicoot	<i>Isodon obesulus</i>	Endangered
Matted Flax-Lily	<i>Dianella amoena</i>	Endangered
Maroon Leek-Orchid	<i>Prasophyllum frenchii</i>	Endangered

Downer developed management plans, procedures, and controls to mitigate adverse impacts to the habitats both during construction and now during operations, and we have been successfully complying with EPBC conditions each year.

CONSERVATION AND ENHANCEMENT ACTIVITIES

Downer has implemented multiple conservation and enhancement activities from when we took ownership of the greenfield site to construction of Pakenham East Depot, to today's operations including:

- Educating employees, contractors and visitors on the flora and fauna management plans and controls.
- Implementing No Go Zone, fencing and conservation buffers.
- Maintain and restore existing grass cover around the waterways.
- Maintaining the vegetation cover of the retained flora and fauna habitat.
- Rabbit proof fencing.
- Pest control.
- Weed control.
- Revegetate with native species.
- Implementing bandicoot gates and bandicoot shelters.



Before installation of rabbit netting and after with a disappointed rabbit.



"*Litoria raniformis*" by Tnarg 12345 at the English-language Wikipedia | CC BY-SA 3.0
https://commons.wikimedia.org/wiki/File:Litoria_raniformis.jpg

CONSERVATION AND ENHANCEMENT ACTIVITIES FOR ENDANGERED AND VULNERABLE SPECIES GROWLING GRASS FROG (*Litoria raniformis*)

The Growling Grass Frog habitat is distributed across water bodies in south-eastern Australia, including onsite at Pakenham. It was a widespread population but declined suddenly from about 1990 due to habitat loss and deadly fungal disease. Growling Grass Frogs need still or slow-moving water, such as the dams at Pakenham, and prefer habitats that include abundant aquatic vegetation and minimal tree canopy cover. Pakenham Depot is maintaining and enhancing their grassy habitat via biomass management, targeted weed control and planting preferred habitat species.



Grass cover maintenance and revegetation in Growling Grass Frog habitat



Weed control



"Southern brown bandicoot" by Pierre Pouliquin | CC BY-NC 2.0
https://www.flickr.com/photos/pierre_pouliquin/96669582

THE SOUTHERN BROWN BANDICOOT

The Southern Brown Bandicoot is a medium-sized omnivorous marsupial found mostly in southern Australia. They prefer scrubby habitats with plenty of low ground cover and shelter. Due to the Southern Brown Bandicoots' preference for scrubby habitat, Pakenham East Depot has taken a staged approach to replacing weeds, such as Blackberry and Gorse, with native vegetation.

While the weeds are removed, the woody cover is retained ensuring the Southern Brown Bandicoots have cover for shelter while the native vegetation is replanted. Over time, the Southern Brown Bandicoot habitat areas at Pakenham East Depot will be replaced with native vegetation.

A strategic approach is undertaken to planting recommended native and indigenous species, depending on the existing species cover, time of the year, survival ability, management requirements, target ecosystem service and vegetation structure in each habitat area.

MATTED FLAX-LILY (*Dianella amoena*)

Matted Flax-Lily is a native grassland species that is considered endemic to Victoria. Flowering occurs from October to April and bears several blueish star-shaped flowers. Land clearing, fragmentation of natural remnants, and grazing pressure from introduced herbivores such as sheep and rabbits have had serious impacts. Pakenham East Depot has installed rabbit-proof fencing around key flora areas to prevent grazing of matted flax-lily and ensure their conservation onsite.



"Matted Flax-lily (*Dianella amoena*) at Bababi Djinanang native grassland Fawkner." by Takver from Australia | CC BY-SA 2.0,
[https://commons.wikimedia.org/wiki/File:Matted_Flax-lily_\(Dianella_amoena\)_at_Bababi_Djinanang_native_grassland_Fawkner_\(6335168267\).jpg](https://commons.wikimedia.org/wiki/File:Matted_Flax-lily_(Dianella_amoena)_at_Bababi_Djinanang_native_grassland_Fawkner_(6335168267).jpg)



**MAROON LEEK ORCHID
(PRASOPHYLLUM FRENCHII)**

The Maroon Leek Orchid is endemic to south-eastern Australia, with the flowers being fragrant and variably coloured with greenish and red tones. It is listed as threatened within Victoria with only about seven populations containing 1,000 plants remaining in the state. These remaining populations are under threat from disturbance to and destruction of habitat, weed invasions, and grazing from herbivores, such as rabbits. Downer is protecting the Maroon Leek Orchid habitat at Pakenham East Depot by installing rabbit-proof fencing to prevent grazing pressure on the plants.

Maroon Leek Orchid (*Prasophyllum frenchii*)
<https://images.ala.org.au/image/details?imageId=c0260e2d-434f-4bb7-8564-486aab49c05f>

Innovation through partnership

Richard Francis, Ecological Consultant, Abzeco has developed a bandicoot shelter made up of straw nesting material, treated pine, plywood and iron which have been placed across the habitat areas to provide refuge for the bandicoot.

These shelters placed across the site are either camouflaged with removed Burgan from ecological thinning works or allowed to blend in with the surrounding flora.

Richard has also implemented bandicoot gates, using the Cranbourne Botanic Gardens Bandicoot Gate design. The bandicoot gates provide movement for the bandicoots through the rabbit proof fence.

Abzeco is Downer’s partner that manages the landscape, flora and fauna for Pakenham East Depot. Together, we have engaged on a regular basis to continuously improve and encourage sustainability initiatives and innovations for the project.



(Photo courtesy of Richard Francis)



Pakenham East Depot maintains 70 new High Capacity Metro Trains

Downer is part of the Evolution Rail Consortium, which is partnering with the Victorian Government to deliver 70 new High Capacity Metro Trains (HCMTs) and a range of ancillary activities to support the trains' maintenance and operation.

As the first all-new train design in Victoria for nearly 20 years, a critical component of this city-shaping project is the new depot in Pakenham East where testing and maintenance occur. The 118-hectare site has maintenance capacity for 80 trains – the largest of its kind in Australia. Its stabling yard accommodates 30 trains including other rollingstock, making operations exceedingly flexible.

Downer constructed the Depot using over 90 per cent local content. The Depot was completed in 2018 and in May 2022, it was awarded the Infrastructure Sustainability Council's (ISC) Commended Award for the 'As Built' category. ISC also recognised the Depot's Integrated Test Facility (ITF) as a sustainable innovation for its predicted 40 per cent productivity increase and CO2 reductions.

In September 2022, the Depot was awarded Sustainability and Environmental Excellence at the Australasian Rail Industry Awards.