ESSENDON AIRPORT

SURVEY FOR SIGNIFICANT FLORA AND FAUNA

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ESSENDON AIRPORT

SURVEY FOR SIGNIFICANT FLORA AND FAUNA

Ecology Australia

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1.0 SUMMARY

An assessment of the conservation values (flora, fauna and ecological communities) of Essendon Airport was undertaken to identify significant plant species, vegetation communities and fauna listed under the Commonwealth *Endangered Species Protection Act* 1992 and/or the Victorian *Flora and Fauna Guarantee Act* 1988.

Records of flora and fauna species, terrain, habitat, hydrology and airport activities were obtained by reviewing relevant literature and database searches, communications with airport personnel and a site inspection

Essendon Airport is an area of low biological value. More than seventy years of clearance within the airport grounds and rapid urbanisation of surrounding areas has contributed to the elimination of most native vegetation in the area. Remaining flora and fauna habitats are now highly modified, degraded and weed-invaded. At this time, no specific management activities are needed to accommodate the flora and fauna values of Essendon Airport.

An evaluation of the potential occurrence of listed rare, vulnerable or endangered species and vegetation communities in the study area yielded four listed species and one listed community.

In total 122 vascular plant species recorded at Essendon Airport. Of these, 83% were exotic (naturalised).

Given historic and current management practices, it is extremely unlikely that species or vegetation communities listed with either the Commonwealth *Endangered Species Protection Act* 1992 (ESP) or the Victorian *Flora and Fauna Guarantee Act* 1988 (FFG) are present at Essendon Airport

The main fauna habitats at Essendon Airport are exotic grassland, tree plantings and debris / dirt piles. All are highly modified degraded habitats. At least 54 (9 exotic) bird species, 12 (7 exotic) mammal species, 2 frog species and 2 reptile species have been recorded around Essendon Airport and Moonee Ponds Creek. Most of these species are characteristic of urbanised environments which utilise the habitats at the airport opportunistically, in conjunction with resources throughout the general area.

No fauna listed under the Commonwealth *Endangered Species Protection Act* 1992 or the Victorian *Flora and Fauna Guarantee Act* 1988 are currently known to occur, or are likely to occur, at Essendon Airport.

2.0 INTRODUCTION

Ecology Australia Pty Ltd was commissioned (January 1998) by the Federal Airports Corporation (FAC) to undertake an investigation of the potential occurrence at Essendon Airport of significant flora, fauna and vegetation communities listed under the Commonwealth *Endangered Species Protection Act* 1992 and the Victorian *Flora and Fauna Guarantee Act* 1988. The FAC requires this information:

- to identify any obligations for species protection/management at Essendon Airport arising from the two Acts;
- to identify, in general terms, management needs affecting existing and future development activities at the airport arising from any obligations.

This report presents the results of this investigation and is divided into the following sections:

Section 3 describes the study area;

Section 4 outlines the methodology used to undertake the investigation;

Section 5 describes the results from the field survey, literature reviews and database searches;

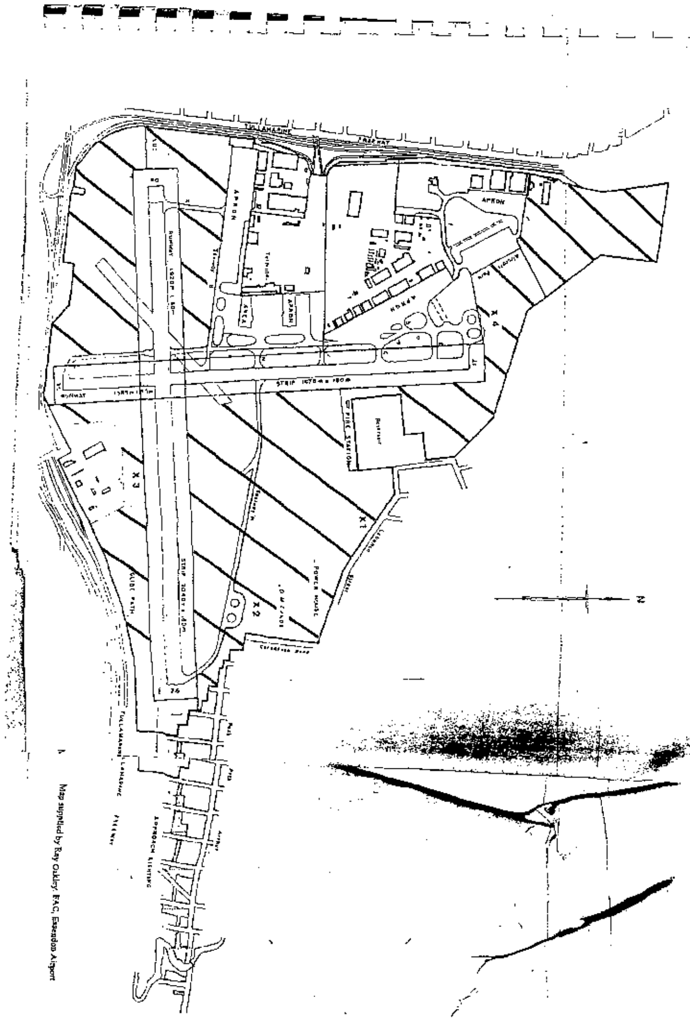
Section 6 outlines the significance of the flora and fauna that occur or potentially occur at Essendon Airport;

Section 7 describes the relevant government Acts and management implications for Essendon Airport.

3.0 STUDY AREA

Essendon Airport (Fig.1.) is located in the Basalt plains of western Victoria. This region was formerly covered by grassland plains on basalt derived soils. With rapid population growth and urbanisation in the 20th century, this region has been mostly cleared of native vegetation. The airport is bounded by urban development with roads along the eastern and northern boundaries, the Tullamarine Freeway along the western boundary and the Freeway and industrial developments along the southern boundary. Land immediately adjacent is classed as urban residential.

Essendon Airport was established in 1919 and came under federal control in 1921. Prior to this, the area functioned as a holding point for stock preceding sale at Newmarket (R. Oakley, Operations and Technical Manager, Essendon Airport, pers. comm.). The airport grounds encompass 300 ha, of which 100 ha comprise airport buildings and runways. The remaining 200 ha are maintained as low grassland (maintained at 5-10 cm height by regular mowing and some spot-spraying of weeds). The airport is mostly flat, with a gently sloping eastern boundary. No watercourses are located within the airport grounds. The nearest watercourse being Moonee Ponds Creek, which meanders from a northerly direction east of the airport. At its closest, the airport is within 400-500 m of the Creek, but is separated by residential areas. Current landscape features are the product of modification with none of the original relief features remaining. The northern section of the airport is constructed on land reclaimed from a former rubbish tip (R. Oakley pers. comm.) Throughout the area there is evidence of soil disturbance (track-works, rock and dirt piles), alteration of hydrology (drainage courses running along side tracks) and general anthropogenic disturbance (rubbish piles, tree plantings, mowing).



Map supplied by Ray Oakley, FAC, Essendon Airport

Figure 1. Essendon Airport. Areas visited during field survey are represented by hatching. Vegetation quadrats sites (numbered 1-4) are marked by an X. Scale 1: 10 000

4.0 METHODS

4.1 Flora

The strategy employed in this study was to gain an understanding of the plant species and vegetation communities listed under the *Flora and Fauna Guarantee Act* 1988 and the *Endangered Species Protection Act* 1992. Then determine whether these are/were likely to occur within the study area, and to sample the vegetation occurring at the airport. Details are outlined below.

- An assessment of the occurrence and condition of vegetation types in the study area by broad field reconnaissance completed during a field survey conducted on 15 January 1998. Semi-randomly located quadrats (Appendix 2) were sampled to describe quadrats and the vegetation communities present at the site. Traversing the study area and sampling provided an inventory of indigenous and exotic vascular plant species evident at the time of the survey.
- An assessment of what species or communities are likely to have formerly occurred in the study area. This was achieved by accessing literature and data from the Flora Information System (FIS) database regularly maintained by the Department of Natural Resources and Environment (DNRE). The system has records of all vegetation quadrats and species lists recorded in Victoria. The FIS request (13 January 1998) for this investigation represented the area bounded by Essendon Airport (as of 1995). By accessing information and extrapolation based on knowledge of plant species' ecology and vegetation community distribution, a determination of the possible species and vegetation communities present, (currently and in the past), can be drawn.

Throughout the report plant nomenclature follows Ross 1996 with additions from Ecology Australia Pty Ltd. Exotic plant species are preceded by an astrict.

4.2 Fauna

4.2.1 Specialist consultation, literature review and database search

A broad overview of the fauna of the study area was obtained from the Atlas of Victorian Wildlife. This Atlas is a database held by the Department of Natural Resources and Environment (DNRE) which provides specific information on the fauna of a given.

A list of all species recorded in the area bounded by Australian Map Grid coordinates Eastings 5821000–5827000 and Northings 314000–317000 (latitude 37°41'00"S-37°44'30"S, longitude 144°53'00"E-144°55'30"E) was obtained from the Atlas of Victorian Wildlife on 12 January 1998. This area encompasses Essendon Airport and a 9 km² area north of the airport (an area extending 3 km along Moonee Ponds Creek). This area is more than twice as large as the study area and was included in the Atlas search to identify species with the potential to occur in the study area. These records include some species which are found rarely (if at all) in the study area (and these are annotated accordingly in Appendix 3.)

Additional information on the fauna of the study area and current management practices was obtained from FAC personnel R. Oakley and B. Sherburne (Essendon Airport), and unpublished literature on the fauna of nearby areas (e.g. Carr *et al.* 1997).

4.2.2 Field survey

A field survey for vertebrate fauna was conducted on 15 January 1997. The primary aim of this survey was to record the fauna habitats within the study area and assess the actual or potential value of these for fauna. The survey was conducted in accordance with the conditions of a DNRE research permit (number RP-96-223) (including provision of results to the Atlas of Victorian Wildlife, DNRE). The techniques used during the field survey are described below.

Habitat assessment

The study area was inspected on foot and visually assessed for potential value as habitat for threatened fauna. Attention was focussed on the floristics, structure, age and level of disturbance of indigenous vegetation, as these features are major determinants of fauna habitat quality. Examples of other important features include soil type, the diversity of vegetation types, the presence of surface rocks and introduced predators.

A 1:8300 aerial photograph of Essendon Airport (taken August 1997) was examined to help confirm these assessments and to ensure that the major vegetation communities were assessed. The photograph was also used to identify the distribution of vegetation communities and to enable evaluation of the study area in a broader landscape context.

Particular attention was paid to habitats utilised by fauna listed on the ESP and/or the FFG Act that have been recorded in the western and northern regions of Melbourne. These species mostly inhabit open grasslands (the most extensive fauna habitat at the airport). In particular, the Striped Legless Lizard and the Grassland Earless Dragon were considered.

Active searching

Reptiles, some frogs and small terrestrial mammals may be surveyed by active searching. Active searching involved the random inspection of microhabitats (rocks, logs, vegetation thickets and human-generated debris) in the study area. January and February are the optimal times for active searching for reptiles and frogs.

General observations

During the field survey, incidental observations of fauna and/or fauna signs (e.g. nests, scats, tracks, burrows) were recorded. These observations were used to confirm and update records from the Atlas of Victorian Wildlife Database, and to contribute any new fauna records made for the study area.

Nomenclature

The scientific names, common names and systematic orders used here follow:

- for mammals, Menkhorst (1995) (common and scientific names) and Walton (1988) (for taxonomic order of mammals);
- Christidis and Boles (1994) for birds; and
- Cogger (1992) for frogs and reptiles.

Common names for fauna are used in the main text; refer to Appendix 3 for a listing of common and scientific names.

4.3 Limitations

The drought of summer 1997-1998 is likely to have resulted in a higher mortality and reproductive success or growth in many flora species. This will have resulted in a lower detectability of some species. Summer timing of this investigation has limited the possibility of detecting seasonal perennial and annual plants (e.g. bulbous and cormous geophytes).

January and February are the optimal times for detecting reptiles and summer migratory bird species. As reproductive success of fauna is generally decreased during a drought period fewer individuals and species are likely to be recorded.

Seasonal limitations for fauna and flora surveys are present at most times of the year, for some particular group of plants and/or animals. The limitations described here are not considered to have significantly biased the results of the study, given the additional research undertaken to complement the field survey.

5.0 RESULTS

5.1 Flora

5.1.1 Plant species

A total of 122 plant taxa (including species, subspecies, varieties, hybrids and cultivars) were recorded from the Essendon Airport study area (Appendix 1), of which 18 (15%) are indigenous, 100 (82%) are naturalised exotic taxa and 4 (3%) species used for non-indigenous plantings. All plant taxa recorded during this study are listed in Appendix 1. Data collected during this survey is routinely incorporated by Ecology Australia Pty Ltd into the Flora Information System maintained by DNRE.

As a consequence of the 1997-98 drought, some plant records collected during the 15 January 1998 survey are likely to be an underestimate of species cover and abundance values. Values for annual species would express this fluctuation more than perennial species. Exotic species (e.g. **Aira* spp.. **Briza* spp. and **Vulpia* spp.) tend to dominate the annual flora of disturbed grasslands, and the exotic cover may be more than surveyed. In addition the summer timing of the survey means that geophytes (e.g. **Romulea rosea*, Onion-weed) and forbes (e.g. **Hypochoeris radicata*, Cats ear) are also recorded at lower than mean levels (Morgan and Rollason 1995).

An FIS database search for significant plant species found that no data have previously been recorded at Essendon Airport.

5.1.2 Vegetation communities

Although some portions of the study area have high cover of *Austrodanthonia* spp, the vegetation of the study area is comprised largely of an extensive suite of exotic species with one broad vegetation community identified.

1. Exotic grassland

Grasslands dominated by exotic pasture species occupy the majority of the study area on soils derived from basalt (Plate 1). The exotic component of these grasslands is the consequence of past management, with mowing largely facilitating their invasion. Although high cover values of *Austrodanthonia* spp. were recorded at some sites within the study area, exotic invasion has degraded the structure and diversity of these original flora relics. These sites would have originally carried treeless grasslands and grassy woodland or forest vegetation but indigenous components would have long been eliminated by clearing or grazing. Much of the area is believed to have formerly supported Plains Grassland, as described by Muir et al. (1997), Stuwe (1986), Craigie and Stuwe (1992) and listed under the *Flora and Fauna Guarantee Act* 1988 (Muir 1994). Wallaby Grasses (*Austrodanthonia* spp.) would have been the dominant grass component of much of the treeless grassland or the grassy component of the woodlands.

Exotic dominants now present are species which have opportunistically colonised under a history of intense grazing by sheep, cattle, horses hares and rabbits, or have been sown as improved pastures. Prominent species include: Wimmera Rye Grass (**Lolium rigidum*), Bromes (mainly **Bromus catharticus*, **B .hordeaceus*, **B. diandrus*), Chilean Needle Grass (**Nassella neesiana*), Serrated Tussock (**N. trichotoma*), Squirrel-tail Fescue (**Vulpia bromoides*), Buck's-horn and Hairy Plantains (**Plantago coronopus* and **P. lanceolata*) and Sterile oat (**Avena sterilis*). The exotic component of the study area extends to landscape enhancement plantings with non-indigenous and exotic woody species (e.g. **Acacia baileyana*, *A. saligna, Melaleuca armillaris, M. lanceolata, Hakea* sp.) and invasion of exotic woody species at the perimeter (edge effect).

These environments are very highly degraded and the vegetation now contains very few indigenous species which generally have an insignificant structural role in the grassland vegetation.

5.2 Fauna

Essendon Airport is a highly modified area with a high degree of human and motorised activity. The study area has been extensively altered and subject to various management practices since the construction of the airport in the 1920s. Most undeveloped sites within the airport are sparsely vegetated, partially due to a need to minimise air-strike hazards by birds. The few remaining fauna habitats on airport land are subject to constant management (grasslands have been mown regularly since the 1930s) and exotic fauna (particularly birds) are common. The nearest remaining fauna habitats are along Moonee Ponds Creek, which has also been degraded. Land to the east, north and south of the airport is entirely comprised of high-density housing.

In the study area and in the vicinity of Moonee Ponds Creek (north of the airport) at least 54 bird species (45 native and 9 exotic), 12 mammal species (5 native and 7 exotic), 2 frogs (native) and 2 reptiles (native) have been recorded. A list of these species is presented in Appendix 3. Most of these species are widespread, common fauna which have adapted to a range of urban in Victoria. Most of these species are more likely to occur within roadside reserves and gardens, rather than at the airport which has few habitat resources for shelter, foraging or breeding. Species observed at the airport are likely to be utilising limited resources, in conjunction with usage of multiple sites away from the airport. Species of native vertebrate fauna tend to be less tolerant of urbanisation and accordingly would rely entirely on habitats at Essendon Airport. No threatened species of state or national significance are currently known to occur within Essendon Airport or the habitats immediately north of the airport, along Moonee Ponds Creek. There are records of two threatened insect species of state significance within the general area; these records are from 1906 and 1922, and it is highly unlikely that these species occur in the area now (see species descriptions below).

5.2.1 Habitat assessment

Three fauna habitats were recorded at Essendon Airport: exotic grassland, exotic tree plantings and debris/dirt piles.

Exotic grassland

Exotic grassland is the most widespread fauna habitat at Essendon Airport (covering approximately 70%, or 200 ha of 300 ha of the airport) (Plate 1). Very few indigenous plant species remain and all have low cover. Grassland is maintained at 5-10 cm height by regular mowing. There are virtually no surface rocks in the grassland. Soil cracks (2-3 cm wide and at least 10-20 cm deep) are abundant. Open grassland is a favoured foraging area for grassland passerines (e.g. Skylark) and raptors (Peregrine Falcon and Australian Kestrel) that regularly use the area for hunting and feeding – see species descriptions below). Soil cracks provide shelter and insect resources for small reptiles, and some common reptiles (e.g. Tiger Snake *Notechis scutatus* and Common Skink *Lampropholis guichenoti*) may use these areas. A small population of Brown Hare (at least 30 individuals) and at two Red Foxes commonly inhabit the airport grasslands (B. Sherburne pers. comm.).

Exotic plantings and plantations

Several small, scattered stands of trees and tall shrubs are located around the south-eastern corner of the airport grounds and around the Reservoir (large circular storage tanks) just north of the centre of the airport grounds. These narrow rows of vegetation are either planted eucalypts (to 20 m high), *Acacia* sp., *Hakea* sp. or *Melaleuca* sp. shrubs (3-4 m high) (Plate 2). These trees and shrubs are the remnants of planted stands. When flowering, these trees and shrubs provide nectar and insect sources for a small variety of nectarivorous and insectivorous birds (e.g. honeyeaters, lorikeets, wattlebirds). Two bird nests (species unknown) were

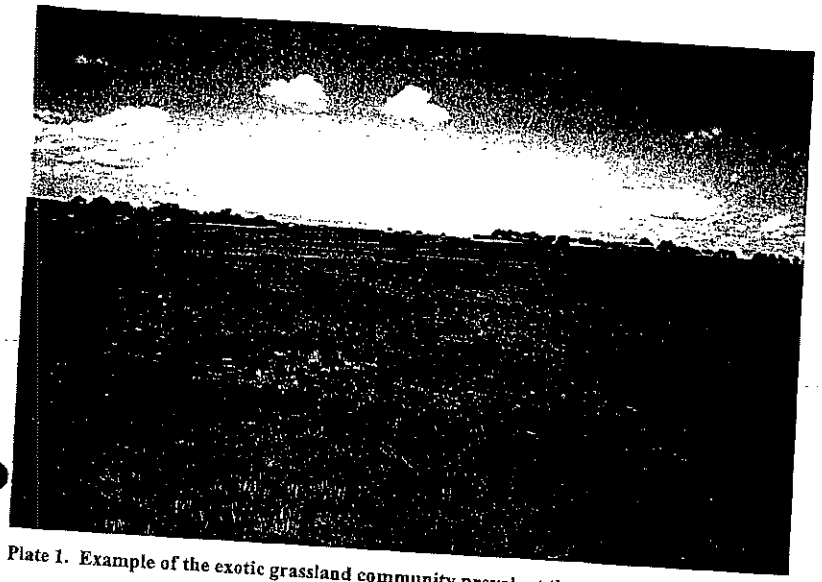


Plate 1. Example of the exotic grassland community prevalent throughout the study area.

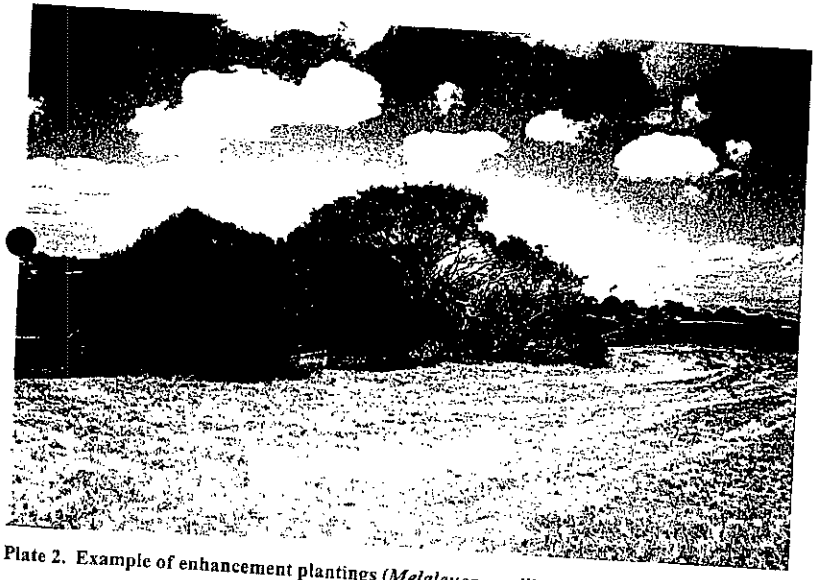


Plate 2. Example of enhancement plantings (*Melaleuca armillaris* and *Acacia saligna*).

observed in dense *Melaleuca* sp. shrubs. These sites are small and sparse and represent a temporary food source which may supplement more extensive off site areas of flowering plants. Common Ringtail and Brushtail Possum may enter these stands occasionally to forage, but no evidence of these species was found. Occasional plants of African boxthorn (*Lycium ferocissimum*) and perimeter garden plants are unlikely to be utilised by listed fauna.

Dirt piles and debris

Adjacent to the Reservoir (large circular storage tanks) and in the northern section are several piles of human-generated debris (scrap metal, wood, blocks of concrete and bricks) and rock and soil piles. These artificial habitats support large numbers of invertebrates (woodlice, crickets, spiders) and may provide food sources for small reptiles and frogs, as well as numerous sites for shelter. Common Skinks (*Lampropholis guichenoti*) may forage in these piles, however no reptiles were observed in one-hour of active searching. A rabbit warren was present in one dirt pile and the area probably supports Brown and Black Rats.

Nearby habitats not present in the study area

There are no aquatic habitats for aquatic vertebrate fauna within the airport grounds. Moonee Ponds Creek meanders several hundred metres east of the airport boundaries and provides the nearest habitats for aquatic fauna. All sections of the creek are highly degraded and most adjacent areas are urbanised. Platypus, Water Rat, several waterbirds and two common frog species have been recorded near the study area (Atlas of Victorian Wildlife database) (see Appendix 3): these are most likely to be records from around the Creek.

5.2.2 Literature review and database searches

Atlas of Victorian Wildlife Database

Ten (10) (5 exotic) mammal species, 51 (9 exotic) bird species, 2 frog species and 2 reptile species are listed on the Atlas of Victorian Wildlife for Essendon Airport and the section of Moonee Ponds Creek immediately north of the airport (Appendix 3). Most of these are relatively common, widespread species which utilise urbanised or semi-urbanised areas. For the great majority of species, the degraded and/or anthropogenic habitats at the airport grounds renders the airport as an area of low biological value for most fauna. No vertebrate fauna of state or national significance have been recorded from the study area or along adjacent sections of Moonee Ponds Creek.

Historic (early 20th century) records exist for two insect species of state significance (the Eltham Copper Butterfly and Golden Sun Moth) 3-4 km north-east of the airport. A brief account of these species is given below. In addition, the value of the airport habitats was assessed for two species not listed in the Atlas records (Grassland Earless Dragon and Striped Legless Lizard). Both species are listed under the Commonwealth *Endangered Species Protection Act* 1992 (ESP) and the Victorian *Flora and Fauna Guarantee Act* 1988 (FFG). Some information is presented on the occurrence of the Peregrine Falcon at the airport.

Eltham Copper Butterfly

The Eltham Copper Butterfly (*Paralucia pyrodiscus lucida*) is classified as Vulnerable in Victoria (CNR 1995) and is listed under the *Flora and Fauna Guarantee Act* 1988. It is a subspecies of the Dull Copper Butterfly and is separated by the sharply defined, distinctively shaped patch of bright copper scales on the male hind wing.

The butterfly is currently known from ten locations in the Eltham-Greensborough area near Melbourne, another in central Victoria and several in the Wimmera (Webster 1993). Its known habitat is sparse dry woodland with a eucalypt canopy, mixed mid-storey and well-defined under-storey (Webster 1993), and was probably relatively once widespread. Extensive habitat destruction and urbanisation are the main factors which have contributed to its decline.

There is a single record of a specimen from 1922 in Broadmeadows (Atlas of Victorian Wildlife), 3-4 km north-east of Essendon Airport. The species is extinct in most of its former range and locally all suitable habitat has been eliminated.

Golden Sun Moth

The Golden Sun Moth (*Synemon plana*) is classified as Endangered in Victoria (CNR 1995) and is listed under the *Flora and Fauna Guarantee Act* 1988. The species was once widely distributed over a large area of south-eastern Australia, with a wide distribution in Victoria. Of 60 sites where the species has been recorded in Victoria, it is now likely to exist at only 12 of these (Scientific Advisory Committee 1994).

The species has a very specialised habitat, occurring only within *Austrodanthonia*-dominant grasslands (Wallaby-grass grasslands) (Scientific Advisory Committee 1994). These grasslands have almost disappeared as a result of agricultural development. Disturbance or clearance of remaining *Austrodanthonia*-grassland is a serious threat to the survival of the species.

Four (4) historic records of the Golden Sun Moth exist from sites in Broadmeadows 3-4 km north-east of the airport (one from 1900, two from 1906 and one of unknown date, Atlas of Victorian Wildlife). At this time, *Austrodanthonia*-grasslands were probably wide spread in the Melbourne region. These areas, including the grasslands of the airport, have been destroyed for urban development, or are now dominated almost entirely by exotic grasses. Although some *Austrodanthonia* species were recorded during field work (Section 5.1), their cover has been reduced and is minimal except in very small areas.

Striped Legless Lizard

The Striped Legless Lizard (*Delmar impar*) is a threatened species of state and National significance and is listed under the Victorian *Flora and Fauna Guarantee Act* 1988 and the Commonwealth *Endangered Species Protection Act* 1992.

Populations are known from the western suburbs of Melbourne, with the majority of sightings in native *Themeda* and *Austrodanthonia* grassland such as at Derrimut Grassland Reserve (Coulson 1990). In these areas, the species shelters and forages around rocky knolls, grass tussocks and the soil cracks which appear in summer as soils dry and shrink.

The exotic grasslands of the airport are not considered suitable habitat for the species and it is very unlikely that the species would occur at the airport. There are no large patches of native grassland within several kilometres of the airport where populations remain. The lack of rocks and rockpiles in the airport grasslands has limited the available cover for the species. Further, management practices, such as mowing, have degraded vegetation cover and the species generally prefers a denser more structurally intact vegetation cover than is present in the study area.

Grassland Earless Dragon

The Grassland Earless Dragon (*Tympanocryptis lineata pinguicolla*) is Endangered in Victoria and is listed under the *Flora and Fauna Guarantee Act* 1988. The species is also Endangered in the ACT.

The Dragon is a small, cryptic lizard, historically occurring on the basalt grassland plains between Melbourne and Geelong, with another population on the Monaro tablelands of the ACT and NSW. The last specimen to be recorded from Victoria was from the Derrimut area in western Melbourne in the 1960s. Extensive surveys at many sites in Melbourne have failed to detect the species and it may be extinct in Victoria. Current research is being conducted within the ACT and NSW at 14 grassland sites. It appears that the species prefers sparse native grasslands (with *Austrodanthonia* and *Austrostipa* (Spear-grass)) with soil cracks and rocky knolls being used for shelter and breeding.

The grasslands at the airport are unsuitable habitat for the species

Peregrine Falcon

The Peregrine Falcon (*Falco peregrinus*) is a raptor with a global distribution, with subspecies occurring in North America, Africa, Eurasia and Australasia. Within Australia the species is considered secure. Although, as with most predators positioned near the top of the food chain, the species occurs in naturally low densities and is thus vulnerable to disturbances, which could result in large population fluctuations. It is not listed by DNRE as a species of possible conservation concern.

The species is widespread in Victoria and nesting sites are known from most regions (V. Hurley, DNRE, pers. comm.). The species has been known to use Essendon Airport as a feeding and breeding area for some years now. A pair nested annually on one of the buildings at the airport until in 1994 when the female was killed (B. Sherburne pers. comm.). Another female has taken up residence with a male, but they have not been recorded breeding at the airport. At least four birds use the airport grasslands as a feeding area; two adults were recently observed giving food to two juveniles on the grasslands (B. Sherburne pers. comm.).

Other raptors utilise the airport grasslands for foraging. Brown Falcons are regularly observed and at least one Australian Kestrel is resident (B. Sherburne pers. comm.).

5.2.3 Active searching

No animals were recorded from opportunistic searches of microhabitats (dirt piles, rocks and human generated debris).

5.2.4 General observations

Two (2) introduced mammal species and 13 (6 introduced) bird species were recorded from general observations. Only the Brown Hare had not been previously recorded and was an addition to the Atlas of Victorian Wildlife records.

6.0 SIGNIFICANCE OF FLORA AND FAUNA

6.1 Flora

6.1.1 Plant species

Four plant species and one plant community of significance are likely to have occurred in the study area prior to large-scale land clearance (Table 1). These species are depleted, rare, vulnerable or endangered in Victoria or nationally (Gullan *et al.* 1990, Briggs and Leigh 1995). The species would have occurred in either of the following vegetation communities deemed to have comprised the original vegetation of the study area. The location of these communities is based on their distribution in Victoria as indicated by Walsh and Entwisle (1993, 1996), Gullan *et al.* (1990), and our personal knowledge of the vegetation of the Greater Melbourne region:

- Plains Grassland;
- Grassy Woodland or Forest (dominated by Grey Box, Red Gum and/or Yellow Box).

Table 1. Indigenous plant species listed under the Victorian *Flora and Fauna Guarantee Act* 1988 (FFG) and the Federal *Endangered Species Protection Act* 1992 (ESP) which may have occurred as original components of pre-European vegetation at Essendon Airport.

Species	Common name	FFG Act 1988	ESP Act 1992	Vegetation Community
Glycine latrobeana	Clover Glycine	+	V	A, B
Lepidium hyssopifolium	Small Pepper-cress	+	E	B
Rutidosis leptorrhynchoides	Button Wrinklewort	+	E	A, B
Senecio macrocarpus	Large-fruit Groundsel	+	V	A, B
Vegetation Communities				
Western (Basalt) Plains		+		

E - Endangered
V - Vulnerable

Vegetation communities

A - Plains Grassland (including ephemeral wetlands)
B - Grassy Woodland or Forest

It is highly unlikely that any of these species persists in the study area.

It is also highly improbable that populations of plant species of state significance not yet listed under either the Commonwealth *Endangered Species Protection Act* 1992, the *Victorian Flora and Fauna Guarantee Act* 1988 persist in the study area.

The findings of this investigation indicate that the probability of the study area containing plant species of state or national significance is negligible. Several plant species are regionally significant for the Volcanic Plain (Carr in prep.) and the Melbourne region (Robinson *et al.*1986) (Table 2.)

Table 2. Plant species of regional significance (Volcanic Plain and Melbourne) recorded from Essendon Airport, 15 January, 1998

Volcanic Plain Region

Species	Common name	Conservation status
Bothriochloa macra	Red-leg Grass	Regionally rare
Convolvulus erubescens	Pink Bindweed	Regionally depleted
Einandia nutans	Nodding Saltbush	Regionally depleted
Homopholis proluta	Rigid panic	Regionally rare

Melbourne Region

Species	Common name	Conservation status
Atriplex semibaccata	Berry Saltbush	None available
Einandia nutans	Nodding Saltbush	None available
Homopholis proluta	Rigid panic	None available

Most populations of these regionally significant species are small. It should be noted that these species are not listed with either the FFG or ESP and are not covered by any current legislation.

6.1.2 Vegetation communities

The significance of a particular vegetation community is primarily a function of rarity. This is represented by the following criteria:

- distribution and abundance of the community in the study area, the region and the site;
- level of depletion since European settlement;
- number and ranking of significant species (of which rarity is an important criterion) occurring in the community;
- size and extent of contiguous vegetation of comparable floristic composition and structure. This criterion primarily assesses the ground coverage of a vegetation community in a given area. Other factors being equal, larger stands of a particular community are generally of higher conservation value than smaller areas.

Secondly, the overall condition of the vegetation community is considered, synonymous terms being 'quality' or 'naturalness'. In botanical jargon this is often referred to as the degree of 'intactness'. This aspect of the vegetation community is primarily a function of disturbance and is represented by the following criteria:

- **Level of disturbance**. This applies particularly to human-induced disturbances which may be biotic (e.g. grazing by domestic stock, weed invasions) or physical (e.g. clearing or drainage operations);
- **Vulnerability to weed invasions**. Weed invasions are generally one of the most serious threats to the conservation of vegetation communities. Due to several intrinsic site factors, but most notably soil fertility and moisture availability, communities differ in susceptibility to weed invasion.

The only vegetation community listed under the *Flora and Fauna Guarantee Act* 1988 that would have occurred in the study area is the **Western (Basalt) Plains Grassland Community** (Muir 1994). This was a major vegetation type in the region prior to large-scale development and clearance of native vegetation.

There are no remnants of this community within the study area, only a small suite of species which once comprised the grasslands (Appendix1).

No remnant of any vegetation community listed under Schedule 2 of the *Endangered Species Protection Act* 1992 was recorded in the study area.

The high degree of weed invasion currently evident in the airport grasslands reflects historic site management (extensive herbicide usage and mowing), which has degraded the structure and composition of the original vegetation. These management methods are mechanisms of disturbance that reduce native species cover, by physical removal and by allowing exotic species to invade. Once established, exotic species generally out-compete native species in all facets of plant resource requirements and can eventually eliminate native species altogether.

6.2 Fauna

Essendon Airport has a low conservation value for vertebrate fauna. No threatened fauna are known from Essendon Airport or the creek habitats along Moonee Ponds Creek within several kilometres north of the airport. The lands immediately east, west and south of the airport are highly modified areas of dense housing with little biological value, and the airport grounds themselves have been modified and managed for at least 70 years. Two significant insect species (the Golden Sun Moth and Eltham Copper Butterfly) were recorded from the general area in the early 20th century. Widespread habitat clearance and modification have rendered the region unsuitable for both species, which are probably locally extinct in the region.

These findings are in agreement with those of A. Webster (Threatened Species Management Officer, Flora and Fauna Fisheries – Port Philip Region). He concluded, after a one-day visit to the site (14 May 1997), that 'the site appears to be highly modified and unlikely to support ESP-listed species' and that 'if ESP listed species were recorded then it is likely that they may be either transitory or else co-habit with existing land-use practices undertaken on the airport' (A. Webster, in litt. to R. Oakley, May 1997).

7.0 MANAGEMENT IMPLICATIONS

There are no flora, fauna or ecological communities which occur at Essendon Airport that are listed under state and/or Commonwealth legislation. In the event that a significant species were to occur within the grounds of the airport or potentially on lands adjacent to the airport, then an assessment may be required. This could include the status of the species at the airport and potential impacts of proposed airport developments. The assessment would be initiated in accordance with the Acts described below.

7.1 Relevant legislation

7.1.1 Endangered Species Protection Act 1992

Brief Description

The Commonwealth ESP Act has the following objectives that relate to both Commonwealth land and Commonwealth agencies:

- promote the recovery of species and ecological communities that are endangered or vulnerable;
- prevent other species and ecological communities from becoming endangered;
- reduce conflict in land management through readily understood mechanisms relating to the conservation of species and ecological communities that are endangered or vulnerable;
- provide for public involvement in, and promote public understanding of, the conservation of such species and ecological communities; and
- encourage cooperative management for the conservation of such species and ecological communities.

There are four schedules on the ESP Act:

- Schedule 1 lists endangered, vulnerable and presumed extinct native species;
- Schedule 2 lists ecological communities that are endangered;
- Schedule 3 lists key threatening processes; and
- Schedule 4 lists Australia's obligations under international treaties.

The ESP Act obliges the Commonwealth, in co-operation with the States, where appropriate, to prepare recovery plans for listed species and ecological communities and threat abatement plans for threatening processes. Commonwealth agencies and the managers of Commonwealth land (e.g. Melbourne Airport) are bound by the requirements of these plans.

Implications for Essendon Airport

Under the ESP Act, Essendon Airport is obliged to:

- manage its land in accordance with relevant recovery and threat abatement plans;
- in the event of future development, ensure compliance with the ESP Act through appropriate application of the *Environment Protection (Impact of Proposals) Act* 1974 (see below).

There are no flora or fauna known to occur at Essendon Airport which are eligible for these considerations. Essendon Airport is bound by the general obligations of the Federal Airports Corporation (FAC). As with Melbourne Airport, Essendon Airport leases land from the Commonwealth government (from April onwards) and is thus bound by the Commonwealth *Endangered Species Protection Act* 1992 (ESP Act) (R.Oakley, pers. comm.). Where a conflict existed between the Commonwealth ESP Act and the FFG Act, then the ESP Act would take precedence.

7.1.2 Flora and Fauna Guarantee Act 1988

Brief description

The objectives of the Victorian FFG Act are the identification, management, control and conservation of threatened and potentially threatened species (and their habitats) and communities. The Act includes schedules which list threatened species and communities, and threatening processes.

The Act requires that Action Statements be prepared that guide management, monitoring and reporting for listed species and communities. Where a Commonwealth recovery plan (for a species listed under the ESP Act) has been initiated, Action Statements under the FFG Act usually reflect and harmonise with them.

Legal advice obtained by the FAC has indicated that there is no conflict between the ESP Act and FFG Act as they apply to Melbourne Airport (Carr *et al.* 1997). These conditions apply to Essendon Airport (R. Oakley, pers. comm.).

Implications for Essendon Airport

There are no fauna or flora listed under the FFG Act which occur, or are likely to occur, at Essendon Airport. In the event that any species were to be found within the airport boundaries, the legislative obligations regarding such species would be dealt with under the FFG Act.

7.1.3 Environment Protection (Impact of Proposals) Act 1974

Brief Description

The *Environment Protection (Impact of Proposals) Act* 1974 (EPIP Act) determines the process by which development by Commonwealth Agencies, and development on Commonwealth land that is deemed to affect the environment to a 'significant extent', is assessed for its environmental impacts. Since April 1993, administrative guidelines to the Act have deemed that to threaten with extinction or impede the recovery of a native species or ecological community listed under the ESP Act (unless it is permitted under a recovery plan or threat abatement plan prepared under the Act) is a 'matter affecting the environment to a significant extent'.

Implications for Essendon Airport

In the event that flora or fauna listed under the ESP Act or the FFG Act were recorded at Essendon Airport, and which were within an area of the airport grounds marked for development, then the development might be subject to the provisions of the EPIP Act. For example, the Swift Parrot (an endangered species listed under the FFG Act) has been recorded feeding on flowering eucalypts at Melbourne Airport in the past and potential suitable habitat for the species still exists there (Carr *et al.* 1997). In this instance, the potential impacts of a development on the species or habitat would be assessed within the framework of the recovery plan that has been written for the species and in accordance with the EPIP Act. Given the low conservation value of Essendon Airport and adjacent lands however, it is unlikely that significant species would occur.

7.2 Management issues

There are no specific management issues associated with significant flora or fauna at this time, given the low biological values documented in this report. Three management actions are regularly undertaken to minimise the risk of birdstrike hazards on aircraft: use of a siren of varying frequencies; deploying fused fire-crackers and occasional use of live shot (R. Oakley, pers. comm.). Silver Gull, European Starling and domestic pigeons are the primary species of air-strike concern (R. Oakley, pers. comm.). A population of Brown Hare residing on the airport grounds is occasionally culled.

The airport grounds have been subject to extensive clearance and regular mowing. Apart from the runway edges and around marker lights, herbicides have not been used on a large scale at the airport for twenty years (R. Oakley, pers. comm.).

In the event of any large-scale development on the north-eastern and eastern boundaries of the airport, the potential impacts on Moonee Ponds Creek might need to be examined.

8.0 GLOSSARY

Agg: Abbreviation for species aggregate – a broad taxonomic concept.

Character species: A species that occurs frequently and consistently in the quadrats of a community or sub-community. It is often a useful indicator species of the community, alone or when considered with a suite of other character species.

Community: A collection of quadrats or sub-communities with floristic and environmental affinities. Communities typically represent discrete vegetation associations but may be more arbitrary divisions devised for convenience to delimit vegetation, e.g. across geographical boundaries.

Dicotyledon (dicot): Belonging to one of the two major classes of flowering plants, characterised by two seed leaves (cotyledons) at the seedling stage; leaves usually with branching veins (nerves) and characteristic floral morphology (c.f. monocotyledon).

Geophyte: Land plant that survives unfavourable conditions by means of underground food storage organs e.g. rhizomes, bulbs, tubers. New shoots arise from these when favourable conditions return.

Herbaceous weed: Non-woody weed species of the 'ground flora', e.g. dicot herbs and grasses (c.f. woody weed).

Indigenous vegetation: Vegetation occurring naturally in a particular area. The vegetation which would have existed in the area before European settlement. The flora (plant species) characterising a locality, as opposed to introduced (exotic) plants, environmental weeds or non-indigenous Australian plants.

Intact vegetation: Vegetation which is (relatively) undisturbed, typically vegetation which is not seriously invaded by weeds.

Monocotyledon (or monocot): Belonging to one of the two major classes of flowering plants, characterised by one seed leaf (cotyledon) at the seedling stage; leaves usually with parallel veins (nerves) and characteristic floral morphology, e.g. grasses, orchids, lilies, rushes, sedges (c.f. dicotyledon).

Native vegetation: A broad term for plants which occur naturally in Australia but which are not necessarily indigenous.

Naturalised species: Plant species which have been deliberately or accidentally introduced and have become established, persisting without human intervention (e.g. artificial watering).

Quadrat: A vegetation sampling unit, typically a 30 m diameter (ca. 700 m^2) circle. All native and exotic species occurring within a quadrat are usually recorded with their cover/abundance values.

Remnant vegetation: Indigenous plant species or communities surviving in an area which is otherwise disturbed or cleared of intact vegetation.

s.l.: Abbreviation for *sensu lato*, a (Latin) taxonomic term meaning 'in the broad sense'.

s.s.: Abbreviation for *sensu stricto*, a (Latin) taxonomic term meaning 'in the narrow sense'.

Sub-community: A vegetation unit comprised of an association of plants which share similar environments, e.g. moisture availability, soil type. A number of quadrats may be grouped together to describe or characterise a particular sub-community.

Vascular: Vascular plants are those possessing vessels for transport of nutrients and water. Non-vascular plants, including mosses and lichens (which absorb moisture through surface cells) are generally not recorded in vegetation surveys.

Weeds: Naturalised, non-indigenous plant species which may be noxious weeds (of agriculture), environmental weeds (which invade indigenous vegetation) or any other undesirable introduced species.

Woody weed: A weed species with woody tissue, viz. shrubs and trees (c.f. herbaceous weed).

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Appendix 1. Vascular plant species recorded from Essendon Airport, Victoria, 15 January 1998.

Taxonomy follows Ross (1996) and Ecology Australia Ecology Australia Pty Ltd unpublished
* denotes naturalised taxa
(P) denotes species planted for landscape enhancement

MONOCOTYLEDONS

AGAVACEAE	
* *Agave americana*	Century Plant
CYPERACEAE	
* *Cyperus eragrostis*	Drain Flat-sedge
IRIDACEAE	
* *Romulea rosea* var. *australis*	Common Onion-grass
JUNCACEAE	
* *Juncus acutus* ssp. *acutus*	Sharp Rush
Juncus subsecundus	Finger Rush
POACEAE	
Agrostis avenacea s.l.	Common Blown Grass
* *Agrostis capillaris*	Brown-top Bent
* *Aira elegans*	Elegant Hair-grass
Austrodanthonia caespitosum	Common Wallaby-grass
Austrodanthonia duttonianum	Brown-back Wallaby-grass
Austrodanthonia pilosum	Velvet Wallaby-grass
Austrodanthonia racemosum var. *racemosum*	Stiped Wallaby-grass
Austrodanthonia setaceum	Bristly Wallaby-grass
Austrostipa scabra s.l.	Rough Spear-grass
* *Avena fatua*	Wild Oat
* *Avena sterilis*	Sterile Oat
Bothriochloa macra	Red-leg Grass
* *Briza minor*	Lesser Quaking-grass
* *Bromus catharticus*	Prairie Grass
* *Bromus diandrus*	Great Brome
* *Bromus hordeaceus* ssp. *hordeaceus*	Soft Brome
Chloris truncata	Windmill Grass
* *Cortaderia selloana*	Silver Pampas Grass
* *Cynodon dactylon* var. *dactylon*	Couch
* *Dactylis glomerata*	Cocksfoot
* *Digitaria sanguinalis*	Summer-grass
* *Ehrharta erecta*	Panic Veldt Grass
Homopholis proluta	Rigid Panic
* *Lolium perenne*	Perennial Rye-grass
* *Lolium rigidum*	Wimmera Rye-grass
* *Nassella hyalina*	Fine Needle-grass
* *Nassella neesiana*	Chilean Needle-grass
* *Nassella trichotoma*	Serrated Tussock
* *Paspalum dilatatum*	Paspalum
* *Pennisetum clandestinum*	Kikuyu
* *Piptatherum miliaceum*	Rice Millet
* *Phalaris aquatica*	Toowoomba Canary-grass
* *Poa pratensis*	English Meadow-grass
* *Polypogon monspeliensis*	Annual Beard-grass
* *Sporobolus indicus* var. *capensis*	Indian Rat-tail Grass
Themeda triandra	Kangaroo Grass
* *Tribolium acutiflorum*	Plagiochloa
* *Vulpia bromoides*	Squirrel-tail Fescue

DICOTYLEDONS

AIZOACEAE	
* *Galenia pubescens*	Galenia
AMARANTHACEAE	
* *Amaranthus muricatus*	Rough-fruit Amaranth
APIACEAE	
* *Daucus carota*	Carrot
* *Foeniculum vulgare*	Fennel
ARALIACEAE	
* *Hedera helix*	Ivy
ASTERACEAE	
* *Arctotheca calendula*	Cape Weed
* *Aster subulatus*	Aster-weed
* *Cirsium vulgare*	Spear Thistle
* *Conyza* sp.	Fleabane
* *Cynara cardunculus*	Spanish Artichoke
* *Gazania rigens*	Gazania
* *Helminthotheca echioides*	Ox-tongue
* *Hypochoeris radicata*	Cat's Ear
* *Lactuca serriola*	Prickly Lettuce
* *Leontodon taraxacoides*	Hairy Hawkbit
* *Sonchus oleraceus*	Sow-thistle
* *Taraxacum* sp.	Dandelion
BRASSICACEAE	
* *Brassica fruticulosa*	Twiggy Turnip
* *Diplotaxis tenuifolia*	Sand Rocket
* *Hirschfeldia incana*	Hoary Mustard
* *Lepidium africanum*	Common Pepper-cress
* *Rapistrum rugosum*	Giant Mustard
CACTACEAE	
* *Opuntia ficus indica*	Prickly Pear
* *Opuntia* sp. (*sensu* Telford)	Prickly Pear
CHENOPODIACEAE	
* *Atriplex prostrata*	Creeping Saltbush
Atriplex semibaccata	Berry Saltbush
* *Chenopodium album*	Fat Hen

* *Chenopodium murale*	Sowbane
Einadia nutans	Nodding Saltbush
CONVOLVULACEAE	
Convolvulus erubescens	Pink Bindweed
CRASSULACEAE	
* *Sedum praeltum*	Wall-pepper
FABACEAE	
* *Medicago polymorpha*	Burr Medic
* *Trifolium angustifolium*	Narrow-leaf Clover
* *Trifolium campestre*	Hop Clover
* *Trifolium glomeratum*	Cluster Clover
* *Trifolium* sp.	Clover
* *Trifolium striatum*	Knotted Clover
* *Trifolium tomentosum*	Woolly Clover
* *Ulex europaeus*	Furze
FUMARIACEAE	
* *Fumaria* sp.	Fumitory
GERANIACEAE	
* *Erodium* sp.	Herons bill
* *Pelargonium* sp.	Geranium
LAMIACEAE	
* *Mentha* sp.	Mint
* *Salvia verbenaca* s.l.	Wild Sage
LYTHRACEAE	
Lythrum hyssopifolia	Small Loosestrife
MALVACEAE	
* *Lavatera arborea*	Tree Mallow
* *Malva parviflora*	Small-flowered Mallow
* *Modiola caroliniana*	Carolina Mallow
MIMOSACEAE	
(P)* *Acacia baileyana*	Cootamundra Wattle
(P)* *Acacia saligna*	Golden-wreath Wattle
* *Paraserianthes lophantha*	Cape Wattle
MYRTACEAE	
(P)* *Eucalyptus cladocalyx*	Sugar Gum
(P) *Hakea* sp.	Bushy Hakea
(P) *Melaleuca armillaris*	Bracelet Honey-myrtle
(P) *Melaleuca lanceolata*	Moonah
OLEACEAE	
* *Ligustrum vulgare*	Common Privet
* *Olea europaea* ssp. *europaea*	Olive
ONAGRACEAE	
Epilobium billardierianum ssp. *cinereum*	Grey Willow-herb
Epilobium hirtigerum	Hairy Willow-herb
OXALIDACEAE	
Oxalis perennans	Grassland Wood-sorrel
PITTOSPORACEAE	
**Pittosporum undulatum*	Sweet Pittosporum
POLYGONACEAE	
* *Polygonum aviculare* s.l.	Prostrate Knotweed
* *Rumex conglomeratus*	Clustered Dock
* *Rumex crispus*	Curled Dock
PRIMULACEAE	
* *Anagallis arvensis*	Pimpernel
ROSACEAE	
* *Cotoneaster pannosus*	Cotoneaster
* *Crataegus monogyna*	Hawthorn
* *Malus domestica* (hybrid)	Domestic Apple
* *Prunus cerasifera*	Cherry-plum
* *Prunus* sp. 1	Angelina Plum
* *Prunus* sp. 2	Plum
* *Pyracantha fortuneana*	Fire-thorn
* *Rosa rubiginosa*	Sweet Briar
* *Rubus discolor*	Blackberry
RUBIACEAE	
* *Coprosma repens*	Mirror-bush
* *Galium aparine*	Cleavers
SALICACEAE	
* *Populus alba*	White Poplar
SOLANACEAE	
* *Lycium ferocissimum*	African Box-thorn
* *Solanum nigrum*	Black Nightshade

Appendix 2. Quadrat data recorded at Essendon Airport, Victoria, 15 January 1998.

Taxonomy follows Ross (1996) and Ecology Australia Ecology Australia Pty Ltd unpublished
* denotes naturalised taxa
(P) denotes planted taxa

Note: "Quadrat" T00142 is a species list

Quadrat: 01 (E04522) Number of species: 21 Date: 15 January 1998 Altitude: 80m
Latitude: 37ø43'36" Longitude: 144ø54'21" Quadrat Area: 700 m² Collector: GWC
Vegetation Community: Exotic Grassland

0343	2	*	*Avena sterilis*	Sterile Oat
0500	2	*	*Bromus diandrus*	Great Brome
0501	1	*	*Bromus hordeaceus* ssp. *hordeaceus*	Soft Brome
0906	+	*	*Cynara cardunculus*	Spanish Artichoke
4554	+	*	*Cynodon dactylon* var. *dactylon*	Couch
8409	1	*	*Erodium* sp.	Heron's-bill
1399	1	*	*Galenia pubescens*	Galenia
2037	3	*	*Lolium rigidum*	Wimmera Rye-grass
2140	1	*	*Medicago polymorpha*	Burr Medic
2213	1	*	*Modiola caroliniana*	Carolina Mallow
3282	2	*	*Nassella neesiana*	Chilean Needle-grass
2263	+	*	*Nassella trichotoma*	Serrated Tussock
2386	1		*Oxalis perennans*	Grassland Wood-sorrel
2430	+	*	*Paspalum dilatatum*	Paspalum
2561	2	*	*Plantago lanceolata*	Ribwort
2942	2	*	*Romulea rosea* var. *australis*	Common Onion-grass
2969	1	*	*Rumex conglomeratus*	Clustered Dock
2970	1	*	*Rumex crispus*	Curled Dock
3204	1	*	*Sonchus oleraceus*	Sow-thistle
2547	4	*	*Tribolium acutiflorum*	Plagiochloa

Quadrat: 02 (E04523) Number of species: 19 Date: 15 January 1998 Altitude: 80m
Latitude: 37ø43'49" Longitude: 144ø54'33" Quadrat Area: 700 m² Collector: GWC
Vegetation Community: Exotic Grassland

0166	+	*	*Aira elegans*	Elegant Hair-grass
0961	2		*Austrodanthonia caespitosum*	Common Wallaby-grass
0980	2		*Austrodanthonia setaceum*	Bristly Wallaby-grass
0501	1	*	*Bromus hordeaceus* ssp. *hordeaceus*	Soft Brome
0756	1		*Chloris truncata*	Windmill Grass
0809	+		*Convolvulus erubescens*	Pink Bindweed
0907	1		*Cynodon dactylon*	Couch
8503	+	*	*Gazania rigens*	Gazania
1843	+		*Juncus subsecundus*	Finger Rush
1895	1	*	*Leontodon taraxacoides*	Hairy Hawkbit
2037	1	*	*Lolium rigidum*	Wimmera Rye-grass
2140	+	*	*Medicago polymorpha*	Burr Medic
2553	2	*	*Plantago coronopus*	Buck's-horn Plantain
2561	1	*	*Plantago lanceolata*	Ribwort
2942	2	*	*Romulea rosea* var. *australis*	Common Onion-grass
2547	1	*	*Tribolium acutiflorum*	Plagiochloa
3439	1	*	*Trifolium striatum*	Knotted Clover

Quadrat: 03 (E04524) Number of species: 21 Date: 15 January 1998 Altitude: 80m
Latitude: 37ø44'02" Longitude: 144ø54'15" Quadrat Area: 700 m² Collector: GWC
Vegetation Community: Exotic Grassland

0166	1	*	*Aira elegans*	Elegant Hair-grass
0961	2		*Austrodanthonia caespitosum*	Common Wallaby-grass
0963	1		*Austrodanthonia duttonianum*	Brown-back Wallaby-grass
0975	1		*Austrodanthonia pilosum*	Velvet Wallaby-grass
0980	2		*Austrodanthonia setaceum*	Bristly Wallaby-grass
0496	1	*	*Briza minor*	Lesser Quaking-grass
0756	1		*Chloris truncata*	Windmill Grass
4554	1	*	*Cynodon dactylon* var. *dactylon*	Couch
1895	2	*	*Leontodon taraxacoides*	Hairy Hawkbit
2036	1	*	*Lolium perenne*	Perennial Rye-grass
2037	2	*	*Lolium rigidum*	Wimmera Rye-grass
2553	2	*	*Plantago coronopus*	Buck's-horn Plantain
2561	1	*	*Plantago lanceolata*	Ribwort
2606	1	*	*Poa pratensis*	English Meadow-grass
2942	2	*	*Romulea rosea* var. *australis*	Common Onion-grass
2969	1	*	*Rumex conglomeratus*	Clustered Dock
2547	1	*	*Tribolium acutiflorum*	Plagiochloa
3429	1	*	*Trifolium glomeratum*	Cluster Clover
9161	1	*	*Trifolium* sp	Clover
3439	1	*	*Trifolium striatum*	Knotted Clover

Quadrat: 04 (E04525) Number of species: 17 Date: 15 January 1998 Altitude: 80m
Latitude: 37ø43'13" Longitude: 144ø53'48" Quadrat Area: 700 m² Collector: GWC
Vegetation Community: Exotic Grassland

0343	1	*	*Avena sterilis*	Sterile Oat
0498	1	*	*Bromus catharticus*	Prairie Grass
0501	2	*	*Bromus hordeaceus* ssp. *hordeaceus*	Soft Brome
1066	+	*	*Diplotaxis tenuifolia*	Sand Rocket
1690	+	*	*Hirschfeldia incana*	Hoary Mustard
2037	2	*	*Lolium rigidum*	Wimmera Rye-grass
2140	1	*	*Medicago polymorpha*	Burr Medic
3282	1	*	*Nassella neesiana*	Chilean Needle-grass
2263	1	*	*Nassella trichotoma*	Serrated Tussock
2451	1	*	*Pennisetum clandestinum*	Kikuyu
2476	+	*	*Phalaris aquatica*	Toowoomba Canary-grass
2561	2	*	*Plantago lanceolata*	Ribwort
2942	2	*	*Romulea rosea* var. *australis*	Common Onion-grass
2970	1	*	*Rumex crispus*	Curled Dock
3204	1	*	*Sonchus oleraceus*	Sow-thistle

Quadrat: Species List (T00142) Number of species: 106 Date: 15 January 1998 Altitude: 80m
Latitude: 37ø43'36" Longitude: 144ø54'21" Quadrat Area: Collector: GWC
Vegetation Community: Exotic Grasslands

0014	*	*Acacia baileyana*	Cootamundra Wattle
0084	*	*Acacia saligna*	Golden-wreath Wattle
0139	*	*Agave americana*	Century Plant
0151		*Agrostis avenacea*	Common Blown Grass
0153	*	*Agrostis capillaris*	Brown-top Bent
0166	*	*Aira elegans*	Elegant Hair-grass
0196	*	*Amaranthus muricatus*	Rough-fruit Amaranth
0223	*	*Anagallis arvensis*	Pimpernel
0255	*	*Arctotheca calendula*	Cape Weed
0297	*	*Aster subulatus*	Aster-weed
0332		*Atriplex semibaccata*	Berry Saltbush
0961		*Austrodanthonia caespitosum*	Common Wallaby-grass
0963		*Austrodanthonia duttonianum*	Brown-back Wallaby-grass
0975		*Austrodanthonia pilosum*	Velvet Wallaby-grass
0977		*Austrodanthonia racemosum* var. *racemosum*	Stiped Wallaby-grass
0980		*Austrodanthonia setaceum*	Bristly Wallaby-grass
3290		*Austrostipa scabra*	Rough Spear-grass
0341	*	*Avena fatua*	Wild Oat
0343	*	*Avena sterilis*	Sterile Oat
0444		*Bothriochloa macra*	Red-leg Grass
0488	*	*Brassica fruticulosa*	Twiggy Turnip
0496	*	*Briza minor*	Lesser Quaking-grass
0498	*	*Bromus catharticus*	Prairie Grass
0500	*	*Bromus diandrus*	Great Brome
0501	*	*Bromus hordeaceus* ssp. *hordeaceus*	Soft Brome
0736	*	*Chenopodium album*	Fat Hen
0746	*	*Chenopodium murale*	Sowbane
0756		*Chloris truncata*	Windmill Grass

0782	*	*Cirsium vulgare*	Spear Thistle
0809		*Convolvulus erubescens*	Pink Bindweed
8253	*	*Conyza* sp.	Fleabane
0823	*	*Coprosma repens*	Mirror-bush
0825	*	*Cortaderia selloana*	Silver Pampas Grass
0844	*	*Cotoneaster pannosus*	Cotoneaster
0867	*	*Crataegus monogyna*	Hawthorn
0906	*	*Cynara cardunculus*	Spanish Artichoke
0907		*Cynodon dactylon*	Couch
4554	*	*Cynodon dactylon* var. *dactylon*	Couch
0918	*	*Cyperus eragrostis*	Drain Flat-sedge
0948	*	*Dactylis glomerata*	Cocksfoot
0988	*	*Daucus carota*	Carrot
1048	*	*Digitaria sanguinalis*	Summer-grass
1066	*	*Diplotaxis tenuifolia*	Sand Rocket
1128	*	*Ehrharta erecta*	Panic Veldt Grass
1133		*Einadia nutans*	Nodding Saltbush
4445		*Epilobium billardierianum* ssp. *cinereum*	Grey Willow-herb
1179		*Epilobium hirtigerum*	Hairy Willow-herb
8409	*	*Erodium* sp.	Fleabane
1263	*	*Eucalyptus cladocalyx*	Sugar Gum
1370	*	*Foeniculum vulgare*	Fennel
8447	*	*Fumaria* sp.	Fumitory
1399	*	*Galenia pubescens*	Galenia
1402	*	*Galium aparine*	Cleavers
8503	*	*Gazania rigens*	Gazania
8516		*Hakea* sp.	Bushy Hakea
1599	*	*Hedera helix*	Ivy
2511	*	*Helminthotheca echioides*	Ox-tongue
1690	*	*Hirschfeldia incana*	Hoary Mustard
2406		*Homopholis proluta*	Rigid Panic
1802	*	*Juncus acutus* ssp. *acutus*	Sharp Rush
1843		*Juncus subsecundus*	Finger Rush
1859	*	*Lactuca saligna*	Willow-leaf Lettuce
1883	*	*Lavatera arborea*	Tree Mallow
1895	*	*Leontodon taraxacoides*	Hairy Hawkbit
1896	*	*Lepidium africanum*	Common Pepper-cress
4689	*	*Ligustrum vulgare*	Common Privet
2036	*	*Lolium perenne*	Perennial Rye-grass
2037	*	*Lolium rigidum*	Wimmera Rye-grass
2078	*	*Lycium ferocissimum*	African Box-thorn
2092		*Lythrum hyssopifolia*	Small Loosestrife
2118	*	*Malus domestica* (hybrid)	Domestic Apple
2122	*	*Malva parviflora*	Small-flowered Mallow
2140	*	*Medicago polymorpha*	Burr Medic
4375		*Melaleuca armillaris*	Bracelet Honey-myrtle
2150		*Melaleuca lancceolata*	Moonah
8729	*	*Mentha* sp.	Mint
2213	*	*Modiola caroliniana*	Carolina Mallow
3282	*	*Nassella neesiana*	Chilean Needle-grass
2263	*	*Nassella trichotoma*	Serrated Tussock
2294	*	*Olea europaea* ssp. *europaea*	Olive
3896	*	*Opuntia* sp. (*sensu* Telford)	Prickly Pear
2386		*Oxalis perennans*	Grassland Wood-sorrel
0169	*	*Paraserianthes lophantha*	Cape Wattle
2430	*	*Paspalum dilatatum*	Paspalum
8868	*	*Pelargonium* sp.	Geranium
2451	*	*Pennisetum clandestinum*	Kikuyu
2476	*	*Phalaris aquatica*	Toowoomba Canary-grass
2543	*	*Pittosporum undulatum*	Sweet Pittosporum
2553	*	*Plantago coronopus*	Buck's-horn Plantain
2561	*	*Plantago lanceolata*	Ribwort
2606	*	*Poa pratensis*	English Meadow-grass
2626	*	*Polygonum aviculare* s.l.	Prostrate Knotweed
2640	*	*Polypogon monspeliensis*	Annual Beard-grass
2679	*	*Populus alba*	White Poplar
2758	*	*Prunus cerasifera*	Cherry-plum
8936	*	*Prunus* sp. 1	Angelina Plum
9131	*	*Prunus* sp. 2	Plum
8956	*	*Pyacantha fortuneana*	Fire-thorn
2919	*	*Rapistrum rugosum*	Giant Mustard
2942	*	*Romulea rosea* var. *australis*	Common Onion-grass
2950	*	*Rosa rubiginosa*	Sweet Briar
2959	*	*Rubus discolor*	Blackberry
2969	*	*Rumex conglomeratus*	Clustered Dock
2970	*	*Rumex crispus*	Curled Dock
2997	*	*Salvia verbenaca*	Wild Sage
9055	*	*Sedum praealtum*	Wall-pepper
3183	*	*Solanum nigrum*	Black Nightshade
3204	*	*Sonchus oleraceus*	Sow-thistle
3226	*	*Sporobolus indicus* var. *capensis*	Indian Rat-tail Grass
3996	*	*Stipa hyalina*	Fine Needle-grass
9122	*	*Taraxacum* sp.	Dandelion
3387		*Themeda triandra*	Kangaroo Grass
2547	*	*Tribolium acutiflorum*	Plagiochloa
3423	*	*Trifolium angustifolium*	Narrow-leaf Clover
3425	*	*Trifolium campestre*	Hop Clover
3429	*	*Trifolium glomeratum*	Cluster Clover
9161	*	*Trifolium* sp.	Clover
3439	*	*Trifolium striatum*	Knotted Clover
3442	*	*Trifolium tomentosum*	Woolly Clover
3471	*	*Ulex europaeus*	Furze
3544	*	*Vulpia bromoides*	Squirrel-tail Fescue

APPENDIX 3. FAUNA OF ESSENDON AIRPORT AND MOONEE PONDS CREEK

Symbols are as follows:

* = introduced species
x = species recorded at Essendon Airport during the field survey or by airport personnel

Atlas of Victorian Wildife Records
Atlas No. = number of records on the Atlas of Victorian Wildlife database up to 12 January 1998
Year = year of most recent records; e.g. 90 = 1990.

PO = potentially occurring species at Essendon Airport recorded in the Moonee Ponds Creek area.

Cons. Stat. = Conservation Status:

Aust. = denotes species threatened nationally; P = potentially vulnerable, S = species of special concern.

ESP = Species listed on Schedule 1 of the Commonwealth *Endangered Species Protection Act* 1992. E = endangered, V = vulnerable.
FFG = Species listed on Schedule 2 of the Victorian *Flora and Fauna Guarantee Act* 1988. L = listed or * recommended for listing. Numbers refer to DNRE Action Statements numbers (for listed species only).

COMMON NAME	SCIENTIFIC NAME	Field survey	Airport personnel	Atlas no.	Year	PO	Aust Con Stat	ESP List	FFG listed
MAMMALS									
Platypus	*Ornithorhynchus anatinus*			1	94		P		
Common Ringtail Possum	*Pseudocheirus peregrinus*			1	64	p			
Common Brushtail Possum	*Trichosurus vulpecula*			2	73	p			
Gould's Long-eared Bat	*Chalinolobus gouldi*			3	71	p			
Water Rat	*Hydromys chrysogaster*			1	88		Q		
*Black Rat	*Rattus rattus*			2	94				
*Brown Rat	*Rattus norvegicus*			2	88				
*Brown Hare	*Lepus capensis*	x	x						
*European Rabbit	*Oryctolagus cuniculus*	x		1	94				
*Dog	*Canis familiaris*		x						
*Red Fox	*Vulpes vulpes*		x	3	94				
*Cat	*Felis catus*			1	94				
BIRDS									
Stubble Quail	*Coturnix pectoralis*		x	1	96				
Pacific Black Duck	*Anas superciliosa*			4	88				
Hoary-headed Grebe	*Poliocephalus poliocephalus*			1	88				
Great-crested Grebe	*Podiceps cristatus*			1	88				
Little Pied Cormorant	*Phalacrocorax melanoleucos*			1	88				
White-faced Heron	*Egretta novaehollandiae*			3	88				
Intermediate Egret	*Ardea intermedia*			1	76				
Australian White Ibis	*Threskiornis molucca*		x	1	88				
Straw-necked Ibis	*Threskiornis spinicollis*		x						
Black-shouldered Kite	*Elanus axillaris*			3	88	p			
Brown Goshawk	*Accipiter fasciatus*			1	88	p			
Brown Falcon	*Falco berigora*		x						
Australian Hobby	*Falco longipennis*			1	88	p			
Peregrine Falcon	*Falco peregrinus*		x						
Australian Kestrel	*Falco cencroides*	x		4	88				
Buff-banded Rail	*Gallirallus philippensis*			1	88				
Masked Lapwing	*Vanellus miles*			3	88	p			
Silver Gull	*Larus novaehollandiae*		x	7	94				

COMMON NAME	SCIENTIFIC NAME	Field survey	Airport personnel	Atlas no.	Year	PO	Aust Con Stat	ESP List	FFG listed
BIRDS continued									
*Rock Dove	*Columba livia*		x	4	94				
*Spotted Turtledove	*Streptopelia chinensis*	x	x	7	94				
Galah	*Cacatua roseicapilla*		x	5	94				
Sulphur-crested Cockatoo	*Cacatua galerita*		x	2	88				
Musk Lorikeet	*Glossopsitta concinna*			1	94	p			
Little Lorikeet	*Glossopsitta pusilla*			1	97	p			
Eastern Rosella	*Platycercus eximius*			1	88	p			
Red-rumped Parrot	*Psephotus haematonotus*			1	88	p			
Barn Owl	*Tyto alba*			1	77				
Laughing Kookaburra	*Dacelo novaeguineae*			1	88	p			
Superb Fairy-wren	*Malurus cyaneus*			2	88	p			
Striated Pardalote	*Pardalotus striatus*			1	96	p			
Yellow-rumped Thornbill	*Acanthiza chrysorrhoa*			4	88	p			
Red Wattlebird	*Anthochaera carunculata*	x		10	94				
Noisy Miner	*Manorina melanocephala*			1	88	p			
White-plumed Honeyeater	*Lichenostomus penicillatus*	x		12	94				
Flame Robin	*Petroica phoenicea*			1	88				
Magpie-lark	*Grallina cyanoleuca*			8	94	p			
Willie Wagtail	*Rhipidura leucophrys*	x		8	94				
Black-faced Cuckoo-shrike	*Coracina novaehollandiae*			1	88	p			
Australian Magpie	*Gymnorhina tibicen*	x		11	94				
Australian Raven	*Corvus coronoides*	x		1	94				
Little Raven	*Corvus mellori*			5	88	p			
*Skylark	*Alauda arvensis*	x		3	94				
Richard's Pipit	*Anthus novaeseelandiae*			2	94	p			
*House Sparrow	*Passer domesticus*	x		9	94				
*European Greenfinch	*Carduelis chloris*			2	88				
*European Goldfinch	*Carduelis carduelis*			3	88				
Mistletoebird	*Dicaeum hirundinaceum*			2	88	p			
Welcome Swallow	*Hirundo neoxena*	x		7	88				
Little Grassbird	*Megalurus gramineus*			1	88				
Golden-headed Cisticola	*Cisticola exilis*			3	94				
Silvereye	*Zosterops lateralis*			2	88	p			
*Common Blackbird	*Turdus merula*	x		6	88				
*Common Starling	*Sturnus vulgaris*	x		11	94				
*Common Mynah	*Acridotheres tristis*	x		11	94				
FROGS									
Common Eastern Froglet	*Crinia signifera*			5	88				
Growling Grass Frog	*Litoria raniformis*			1	88				
REPTILES									
Eastern Blue-tongue Lizard	*Tiliqua scincoides*			2	88				
Little Whip Snake	*Suta flagellum*			1	88				
BUTTERFLIES / MOTHS									
Eltham Copper	*Paralucia pyrodiscus lucida*			1	22				39
Golden Sun Moth	*Synemon plana*			4	06				L