

Flora and Fauna Report

Feasibility Study for proposed development of land on the north-west corner of Vickers Road/Dallinger Rd

Prepared for

**Albury-Wodonga Development Corporation
&
L.J. Colqhoun & Sons
Real Estate**

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1. INTRODUCTION

The Albury-Wodonga Development Corporation proposes to sell for development a parcel of land on the corner of Vickers and Dallinger Roads. A study has been undertaken to determine the nature and significance of the biodiversity values of this site. The study has been completed within the context of a broader study, the Thurgoona Threatened Species Conservation Strategy. This is because of the potential for wildlife movement through vegetated corridors between Thurgoona and the hillier country of the Nail Can Range and Red Light Hill to the west.

2. STUDY AREA

The subject development site is bounded by Vickers Road to the south, Dallinger Road to the east, residential housing and Trek 31 Caravan Park to the west, industrial development to the north and a floodway to the north-west and north. Two sets of transmission lines cross the land as depicted on the attached map. The author has been advised that the land west of the transmission line is zoned for residential purposes, and that the land east of the transmission easement is zoned for industrial purposes. No surveys were conducted in the Forward Tree Planting block south of Vickers Road, nor the area east of Dallinger Road, proposed as a retention basin.

3. METHODOLOGY

3.1 *Literature Review and Database Search.*

A desktop review involving preliminary database searches for any flora and fauna species of conservation significance as well as a literary review were undertaken before conducting the field surveys. A review by aerial photo-base interpretation of vegetation cover including the links to remnant vegetation of the wider area as well as revegetation blocks was conducted. Flora and Fauna assessment sheets were prepared and adapted from other rapid assessment forms developed by wildlife biologist, Ian Davidson, prior to site inspection.

3.2 *Site Inspection.*

Assessment was undertaken in early Spring. Many ground layer species were still emerging therefore positive identification of these was difficult or impossible. As well, many bird species which may utilize the site have not yet returned in the spring migration. The site was traversed several times, on foot and aided by the use of binoculars. Plants and animals

identified were recorded on data sheets, as were the site condition ratings and summaries of land management issues and ameliorative recommendations. (*See Appendix 2, Page 16*). Five site ratings included separate ratings for floristic diversity and richness, habitat connectivity and a habitat rating which included age, structure of trees, layers of vegetation and overall habitat diversity.

The five category rating system was applied as follows:

- High - near natural (Large Hollow Bearing trees, shrubs, logs, regeneration).
- Medium/High – near natural (one major component missing).
- Medium – several components missing (Large Hollow Bearing trees and weedy).
- Medium/Low – occasional Large Hollow Bearing tree.
- Low – cleared paddock..

Note: “In some cases sites that have medium or lower ratings are utilized by, or have been utilized previously by, threatened wildlife. This automatically gives the site an importance apart from its environment quality rating. In short, the life history of many species of wildlife is not well understood by scientists and the precautionary principle should always be applied when seeking to modify habitats used by threatened species”. (*Ian Davidson.*)

3.3 Trapping

As the site provided potential habitat for the threatened species, Squirrel Glider, targeted fauna surveys were conducted for this species which has been previously recorded in the Thurgoona region.

Sixteen Elliott Type B (15 x 16 x 45 cm) folding aluminium traps were placed strategically over four consecutive nights within the study area. Traps were mounted on platforms on the main trunk of remnant and forward planting trees at a height of three to four metres, inclined at an angle of about 10 degrees above the horizontal to facilitate drainage. Traps were positioned on the south-western side of the trunk to shade the trap from morning sun and were covered with a plastic bag to maintain dry internal conditions and filled with a handful of leaf litter. Each trap was baited with a mixture of peanut butter, rolled oats and honey. The trunk and branches of the tree were sprayed with a mixture of water and honey to act as an attractant.

Survey method	Sampling unit				Total survey effort
	FTP block including remnant vegetation east of transmission lines	FTP Triangular block between easements	FTP block including 3 remnant trees west of transmission line	Night No.	
Squirrel Glider trapping (Elliot type B traps)	10	1	5	1	16 trap nights
Spotlighting	9	1	5	2	15
	8	1	4	3	13
	5	1	4	4	10
					54

No bat surveys were undertaken and only opportunistic reptile surveys within the study area (excluding the roadside) were undertaken along with flora surveys.

4. RESULTS

4.1 Flora.

The proposed development site is grazed pasture, over part of which (Sites A and B) Albury-Wodonga Development Corporation has planted mixed native trees. These forward tree plantings (hereinafter called FTP) include Yellow Box, Blakely's Red Gum, Lemon-scented Gum, Argyle Apple, Paperbarks and Pink-flowering Yellow Gum.

The ground flora is mostly introduced pasture grasses and flat weeds such as Phalaris, Capeweed, Paterson's Curse, Brome, Winter Grass, Subterranean Clover and St. John's Wort.

Small patches of Wallaby Grass occur on the eastern side of the site, amongst the forward tree planting, close to Dallinger Road. Clumps of Common Rush are scattered across the site with Tall Sedge located in the drainage line from the dam situated in the proposed residential housing site.

Several large remnant Blakely's Red Gums occur on the site, along with a few White Box and Yellow Box. Approximately 50 trees with trunk diameters of greater than 30cm at breast height are located along the Dallinger Road verge between the table drain and the existing fenceline. Numerous saplings are also located there. Approximately 33 more remnant trees are located inside the fenceline. Many of the remnant trees are of poor structure and/or senescent.



4.2 Habitat.

Trees

About 83 remnant trees occur across the proposed development site along with numerous FTP trees. Trees were surveyed for minor and major hollows but keyhole entrances and fissures could have been missed. Searches were made for evidence of wear around hollows from entries and exits, chewing of bark and scratchings. Few of the remnant trees inside Area B contained apparent hollows. 16 trees across the study area had traps placed at about 3 metres up the trunk. Twelve of these trap trees were remnant and four FTP trees. Of these, the 12 remnants contained hollows from the size of a 50c piece to the size of a fist, which were only apparent on climbing the tree. It is known that Squirrel Gliders may utilize hollows of this size (*Craig Grabham, Pers. Comm.*). The Yellow Box located in Area A, Site F, contains non-apparent hollows, proven by the disappearance into the tree upon release of the male Squirrel Glider trapped here. The trunk diameters at breast height (DBH) of the remnant trees into which traps were placed measured from 75 cm to 1.9m and the DBH of other remnant trees of the site were of similar sizes. Forty-eight trees with trunk DBH greater than 30cm are located along the Dallinger Road roadside reserve with a further 3 occurring in the south-east corner, adjacent to Vickers Road. Numerous regenerating trees also occur along the Dallinger roadside reserve area. Nineteen trees along this eastern boundary have a DBH greater than 75cm, with 12 of these most likely to contain hollows (based on the tree scaffolding structure).

Drainage Lines and Dams.



Two drainage lines are located in the study area. These are denoted on the attached map as site C – a floodway, and site F – a dam which drains to the north-east. Site F contains a small dam with some riparian vegetation which is providing habitat for at least three frog species. Two other dam locations may be viewed on the attached map. These two contained no riparian vegetation and little in the way of habitat for fauna, yet one frog species was located at the northernmost dam on Site B.

Habitat Linkages (Wildlife Corridors).

The FTPs linkages are:

- (a) Area A, between Trek 31 Caravan Park (Site 1 on attached map and where there are recordings for the Regent Honeyeater) and a large FTP block south of Vickers Road (Site 2, where Speckled Warblers and Diamond Firetails have been recorded, (*I. Davidson, C. Grabham, & BOCA, 2003 various*), and where Hooded Robins have previously bred, (*G. Datson & AWFNC, 1995*); and
- (b) between several remnant trees of the site (located across Area B).

The remnant trees along the Dallinger Road (eastern) side of the site provide an arboreal link:

- (a) to the drainage easement (C) which currently links to the Thurgoona Equestrian Centre site (4) via an area for which a retention basin is proposed (G), across the rail reserve and across and along RTA land reserved for the imminent freeway development (3); and
- (b) to the FTP block south of Vickers Road, as well as remnant roadside trees further north along Dallinger Road.



These linkages provide for movement of wildlife including possums, gliders and birds.

The nature conservation ratings for the site are shown in Table 1 below (Refer to map for Site Numbers and also to Data Sheets, Appendix 2.)

Table 1.

Site No.	Habitat Type	Habitat Rating	Floristic Rating	Linkage Rating
A incl. E	FTP	Med/Low	Low	Med/Low
B	FTP	Medium	Medium	High
C	Drainage Line	Med/Low	Low	Med/High
F	Dam 1	High	-	-
B	Dams 2 & 3	Low	Low	Low
B	Remnant trees	High	Medium	High
A	Remnant trees	High	Medium	Low
B	Cleared Paddock	Low	Low	Low

4.3 Wildlife.

Birds.

16 species of birds were recorded over 3 separate site visits (*See Appendix 1*). Bird species recorded are considered secure. Most of the birds recorded are relatively disturbance tolerant species and characteristic of the avifauna assemblages found within largely cleared landscapes.

Frogs.

Three frog species were heard at Dam 1. These were the Common Froglet, the Spotted Marsh Frog and Peron's Tree Frog. Spotlighting revealed the presence of one species, the Pobblebonk Frog, at the northern dam on Site B. These species are considered secure.

Mammals.

Five Squirrel Gliders were trapped during the four nights of trap surveys including two lactating females with young, two sexually mature females without young and one sexually mature male. All gliders were marked and released at point of capture. One female with young in the pouch was retrapped on the final night. This species is listed as threatened under the New South Wales Threatened Species Conservation Act 1995 (TSC Act).



Spotlighting revealed the presence of two Brushtail Possums and one Ringtail Possum on the roadside.

A Brown Hare was observed in Site A during flora and diurnal fauna surveys.

Reptiles.

No reptiles were found.

5. POTENTIAL IMPACTS

The study area is substantially modified from the pre-European environment, in that widespread clearing of trees and shrubs and grazing have resulted in the loss of much of the original vegetation. The proposed development site supports low quality grazed pasture, planted trees and scattered as well as clumped Remnant Red Gums, Yellow Box and White Box. The tree species of the site are listed as an endangered ecological community (EEC) of Box-Gum Woodland (White Box-Yellow Box-Blakely's Red Gum Woodland) under the NSW TSC Act and also nationally as Grassy White Box Woodland under the Environment Protection and Biodiversity Conservation Act 1999. The Squirrel Glider, a threatened species listed under the NSW Threatened Species Conservation Act 1995, has been found to be utilising the remnant tree habitat across much of the site and this is further discussed, as follows:-

Site A:

The development of the residential zoning area (A) may impact on the three remnant trees which occur at Dam 1. At least one of these is a known roost site for the Squirrel Glider. The loss of Dam 1 would also mean the loss of frog habitat from this site. The loss of FTP of this area would mean the loss of an important linkage for the Squirrel Glider to the FTP block south of Vickers Road.

Site B:

The development of area (B) will impact on the sparse habitat in which the Pobblebonk frog is existing at the northernmost dam. It also has the potential for high impact on remnant trees of the site as industrial subdivision design must take into account access for "B Double" trucks and cranes as well as buildings, fences and general access. The importance of this impact is discussed below.

Hollow bearing trees are not common in urban areas. Many original trees were cleared prior to urban development and there are few suburbs that are sufficiently well established to contain planted trees old enough to have developed hollows. Some introduced trees are not prone to developing hollows. Dead limbs and decaying and dead trees can represent an unacceptable safety risk in populated areas and are often actively removed. The loss of old hollow bearing trees will impact on hollow obligate and opportunistic bird species such as those present during the survey. Many birds use hollows seasonally, for rearing of young. Some use hollows as diurnal or nocturnal roost sites. Bats use hollows as diurnal roosts and maternity colonies. Species which roost in colonies typically use large hollows located in standing trees. Mammals such as possums and gliders use hollows as diurnal dens or places to rear young. Several scansorial (climbing) species also use hollows. Many species use multiple hollows, influenced by parasite burdens, different thermoregulatory properties, social organisation, shifts in foraging or home ranges, predation, and the ephemeral nature of hollows. The proportion of eucalypts that can be expected to contain hollows suitable for fauna remains low for trees less than 120-180 years of age, with even older trees required by large fauna. A substantial depletion of hollows will impact upon populations of hollow-using fauna and reduce the number of species that an area can support. (*Gibbons & Lindenmayer, 2002*)

An important point to note is that Squirrel Gliders, along with many other species of hollow-dependent fauna, require more than one hollow tree in which to live (van der Ree 2000). At Euroa in NE Victoria, Squirrel Gliders swapped den trees on average once every five days, and used up to 15 different den trees over an 80 day period (van der Ree 2000). And when animals swapped den trees, they moved to a tree that was approximately 250 m from the tree they occupied the previous day. An important habitat component for Squirrel Gliders is the maintenance of a perpetual supply of suitable hollows distributed across all areas of potential habitat (van der Ree, 2003). Squirrel Gliders are able to persist in relatively highly modified landscapes if sufficient high quality habitat remains (van der Ree 2002).

The low numbers and scattered distribution of hollow bearing trees within the district (Davidson and Datson, 2003) is likely to be a limiting factor on populations of hollow dependant species, including Squirrel Gliders. As a result, maintaining hollow bearing trees should be a high priority. (Davidson, 2003) As well, maintaining or enhancing the links between hollow bearing trees in the study area and across the greater locality is vital to avoid Squirrel Gliders having to come to ground where the risk of predation is increased. (van der Ree, 2003).

6. SITE RECOMMENDATIONS & COMPENSATORY MEASURES

The design of lot layout should allow for tree retention where possible. Retention of remnant tree areas requires ongoing management, with some areas more difficult to maintain than others for a number of reasons. Site B is a proposed industrial site and it is perceived that the trees of this area may be difficult to maintain in their entirety. (As the vegetation now stands, with a weedy understorey and no understorey, it is also perceived to be a management issue.) Over time, any tree cover retained on an industrial site will decline for many reasons including loss of natural recruitment from windshed seed.

The following preliminary recommendations are made as minimum provisions for the Squirrel Glider on this site:-

1. Site B.

Retention of remnant trees within a fenced 40 metre minimum width corridor, including the roadside vegetation west of the table drain (marked D on the attached map), is recommended. This fenced corridor should widen to include clumps of remnant trees (and FTP) as depicted on the attached map, because these are the largest trees of the site and are key linkage trees, or are some of the trees in which the gliders were trapped . (Note: The corridor boundaries as delineated are indicative only, partly because of the author's difficulty in differentiating between shadows and trees on the aerial photo-based map provided, and partly because it is a suggested guideline which could be amended as long as the recommended outcome is achieved. The intent is to preserve the trees and surrounds.)

This recommendation should allow the retention of 50 trees > 30cm dbh along the roadside corridor with a further 8, including the largest trees of the site where two gliders were trapped, retained in a node linked to this corridor. This corridor links the drainage line east of Dallinger Road and the FTP block south of Vickers Road. This corridor should be retained under the vegetation framework of the Thurgoona Threatened Species Conservation (TSC) Strategy. This corridor should be enhanced with shrub plantings indigenous to the area, belonging to the Box-Gum Woodland community. (*See Thurgoona Threatened Species Conservation Strategy, Revegetation Guidelines*).

2. Site A.

Retention of a corridor of existing FTP at a minimum width of 20 metres between Trek 31 Caravan Park and the FTP block south of Vickers Road. (*See recommended location E, Map 1.*) The overstorey of the FTP should be enhanced with shrubby understorey, including prickly species, to increase opportunities for resting and nesting for small birds. (*Refer to TTSCS Revegetation Guidelines.*)

If residential subdivision design allows, subject to engineering constraints, the dam (F) should be retained if possible, including the 3 remnant trees located there. A 20 metre wide link should be provided from the remnant trees to the transmission easement, to allow Squirrel Glider movement.

3. Site C. Revegetation of the top of the bank areas of the floodway in a 30 metre wide corridor which widens where necessary to include 2 remnant trees as depicted on the attached map.

4. Any development of access points from Vickers and Dallinger Roads should maintain protection of the vegetation by fencing. Consideration should be made for careful placement of access routes which allow for arboreal corridor distance gaps of no more than 40 metres, and preferably 25 metres to avoid loss of vegetation, which will allow the Squirrel Gliders to glide from canopy to canopy without having to come to ground. It would be preferable that access be available only from Vickers Road to protect the integrity of the Dallinger Road roadside vegetation.

5. Site G is to be developed separately as a retention basin. It is important that remnant trees be retained on this site to lessen the impact of habitat loss and connectivity issues for the Squirrel Glider. Some linkage trees in particular will need protection during levee bank construction and the location of this levee bank will require careful consideration. Site inspection by the author and AWDC personnel should alleviate this issue. There is the potential for the Squirrel Glider to cross the rail reserve at this point and to disperse to the east and north along and across the proposed freeway route.

6. As a compensatory measure for the expected eventual loss of about 20 large remnant trees in the industrial area, a patch of regenerating Box-Gum Woodland under AWDC ownership should be retained as undeveloped public land and be enhanced with shrub plantings which would provide an area for resting and foraging for woodland birds. This compensatory patch is contained on land bounded by Nagle Road and Kaitlers Road (*Area I, Map 2*). The

retention of the existing FTP and further enhancement by shrub plantings linking to this patch is also recommended. This compensatory measure, along with the vegetation framework to be retained under the Thurgoona Threatened Species Conservation Strategy allows for further protection and enhancement of wildlife habitat within the wider locality. It does not however provide for impacts on habitat by the RTA freeway development to the east of the site. This issue needs to be addressed by the RTA and NSW NPWS.

7. The NSW local fire authority has listed this area as Low Risk, Vegetation 2 category. The asset protection zone recommendation for this development should not infringe upon the recommended vegetation retention corridor as this corridor is the minimum habitat requirement for the threatened Squirrel Glider.

7. SUMMARY

Before acceptance of the preliminary recommendations, the completion of an Eight Part Test for threatened species and threatened ecological communities as required by the provisions of the NSW EP&A Act 1979 and the TSC Act 1995 and also the EPBC Act 1999 must be carried out. The questions to be considered are:-

- Whether the loss of 19 remnant trees represents a significant loss of Box-Gum Woodland?
- How are the remnant trees to be managed if they are retained?
- Whether the Squirrel Glider population of this site is part of the Thurgoona population?
- Whether the Squirrel Glider population of this site depends on the total remnant tree habitat located on the proposed development site?
- Whether the habitat recommended for retention is sufficient?
- What is the overall impact of the loss of 19 large trees, when considering the available amount of habitat for the Squirrel Glider?
- What will the impacts be of the anticipated maintenance program along the enhanced corridor?
- Is the recommended compensatory measure adequate?

Further studies may lead to the conclusion that the loss of the remnant tree habitat of the industrial site would necessitate a Species Impact Statement for the Squirrel Glider. If 70% of

the remnant trees are retained (including, specifically, the trees in which the gliders were trapped, which are the largest trees of the site) then development is less likely to have a significant effect and the loss of 30% of trees is more likely to be adequately compensated by the recommendations.

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8. REFERENCES.

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Flora of the study area.

Weeds and Exotics:

<i>Arctotheca calendula</i>	Cape Weed
<i>Bromus sp.</i>	Brome
<i>Echium vulgare</i>	Paterson's Curse
<i>Hypericum perforatum</i>	St. Johns Wort
<i>Phalaris aquatica</i>	Toowoomba Canary Grass
<i>Poa annua</i>	Wintergrass
<i>Trifolium subterranean</i>	Subterranean Clover
<i>Cotoneaster pannosa</i>	Cotoneaster
<i>Olivea europea</i>	Olive
<i>Rosa rubiginosa</i>	Sweet Briar
<i>Prunus sp.</i>	Plum
<i>Juglans sp.</i>	Walnut

Remnants:

<i>Austrodanthonia sp.</i>	Wallaby Grass
<i>Brachychiton populneus</i>	Kurrajong
<i>Carex appressa</i>	Tall Sedge
<i>Eucalyptus albens</i>	White Box
<i>Eucalyptus blakelyi</i>	Blakely's Red Gum
<i>Eucalyptus melliodora</i>	Yellow Box
<i>Juncus sp.</i>	Common Rush

Forward Tree Planting:

<i>Eucalyptus blakelyi</i>	Blakely's Red Gum
<i>Eucalyptus cinerea</i>	Argyle Apple
<i>Eucalyptus citriodora</i>	Lemon-scented Gum
<i>Eucalyptus leucoxylon 'Rosea'</i>	Pink flowering Yellow Gum
<i>Eucalyptus melliodora</i>	Yellow Box
<i>Melaleuca armillaris</i>	Bracelet Honey-myrtle

Birds of the Study Area

<i>Lichenonstomus pencillatus</i>	White-plumed Honeyeater
<i>Grallina cyanoleuca</i>	Magpie Lark
<i>Gymnorhina tibicen</i>	Australian Magpie
<i>Falco cenchroides</i>	Nankeen Kestrel
<i>Dacelo novaeguineae</i>	Laughing Kookaburra
<i>Falcunculus frontatus</i>	Crested Shrike-tit
<i>Anthochaera chrysoptera</i>	Red Wattlebird
<i>Rhipodura rufiventris</i>	Willy Wagtail
<i>Turdus merula*</i>	Common Blackbird*

Psephotus haematonotus
Hirundo neoxena
Corvus coronoides
Anus superciliosa
Ocyphotes lophotes
Platycercus eximius
Manorina melanocephala
Coracina novaehollandiae
Cinclorhamphus cruralis

Red-rumped Parrot
Welcome Swallow
Australian Raven
Pacific Black Duck
Crested Pigeon
Eastern Rosella
Noisy Miner
Black-faced Cuckoo-Shrike
Rufous Songlark

Frogs

Ranidella signifera
Limnodynastes tasmaniensis
Litoria peroni
Limnodynastes dumerili

Common Froglet
Spotted Marsh Frog
Peron's Tree Frog
Pobblebonk

Mammals

Petaurus norfolcensis
Trichosurus vulpecula
Pseudocheirus peregrinus

Squirrel Glider
Brush-tail Possum
Ring-tail Possum

Other

*Lepus capensis**

Hare

Values:	All	A	B	C
Floristics		M	M	L
Habitat		M/L	M	M/L
Linkage		M	H	M/H

Plant List
 (Sparse =1, Common = 2, Abundant = 3)

Indigenous Vegetation Species of AW	Total	A	B	C		Total	A	B	C
Apple Box					Native Oxalis				
Austral Bear's Ear					Native Plantain Sp.				
Austral Cranesbill					Pale Flax-lily				
Austral Indigo					Panic Grass Sp.				
Australian Bindweed					Ploughshare Wattle				
Australian Carrot					Plume Grass Sp.				
Beard Heath					Purple Coral Pea				
Black Cypress Pine					Purple Wiregrass				
Black-anther Flax-lily					Raspwort Sp.				
Blakely's Red Gum		2	2	2	Red Anthered Wallaby Grass				
Blown Grass Sp.					Red Box				
Blue Pincushion					Red Stringybark				
Bluebell Sp.					Red-leg Grass				
Box Mistletoe					Red-stem Wattle				
Bulbine Lily					Rice-Flower Sp.				
Carex Sp.		2			River Red Gum				
Cat's Claw Albany Grevillea					Rock Fern Sp.				
Chocolate Lily					Scaly Buttons				
Clustered Everlasting					Showy Parrot Pea				
Common Buttercup					Showy Podolepis				
Common Correa					Silver Wattle				
Common Cranesbill					Small St. John's Wort				
Common Fringe Lily					Small-leaf Bush Pea *				
Common Hovea					Spear Grass Sp.				
Common Love Grass					Sticky Everlasting				
Common Wheat Grass					Stinking Pennywort				
Cotton Fireweed					Sundew Sp.				
Creamy Candles					Sweet Bursaria				
Daphne Heath					Tick Indigo *				
Drooping Sheoak					Tiny Star				
Drooping Mistletoe		1	1		Tussock Grass Sp.				
Early Nancy					Twiggy Bush Pea				
Erect Guinea Flower					Twining Fringe Lily				
Geebung					Twining Glycine				
Golden Everlasting					Umbrella Sedge Sp.				1
Goodenia Sp.					Urn Heath				
Grass Trigger Plant					Vanilla Lily				
Handsome Flat Pea					Variable Glycine				
Hedge Wattle					Variable Sword-sedge				
Hoary Guinea Flower					Varnish Wattle				
Hoary Sunray					Wallaby Grass Sp.			1	
Hop Bitter Pea					Wattle Mat-rush				
Jersey Cudweed					Weeping Grass				
Juniper Wattle					White Box			1	
Kangaroo Grass					White Cypress Pine				
Kidney Weed					Willow Herb Sp.				
Kurrajong			1		Windmill Grass Sp.				
Lightwood					Woodrush				
Long Leaved Box					Yam Daisy				
Many-flowered Mat-rush					Yellow Box		1	1	
Milkmaids					Yellow buttons				
Narrow-leaf Hopbush					Yellow Rush Lily				
Native Cherry					Common Rush		1	1	
Native Dock									
Other including FTP:					Bracelet Honey-Myrtle			1	1
Lemon scented Gum, Argyle Apple		2	2		Yellow Box		2	2	
Blakely's Red Gum		3	3		Pink fl. Yellow Gum		3	1	

Summary of vegetation and rating (include any threatened species identified and EVC or EEC type(s)):
 Box-Gum Woodland remnants, scattered isolated and clumped trees. Good regeneration in or near Dallinger Rd reserve.

Med/Low

FTP forms a link to FTP block south side of Vickers Rd which is to be retained under Thurgoona TSC Strategy

Habitat Status √ tick box

Ground Layer Character	All	A	B	C	Features	All	A	B	C
Weeds sparse					Rocky outcrop				
Weeds Common in Parts					Creek/Drainage		√		√
Weeds Common Throughout					Dam		√	√	
Weeds Abundant	√				Wetland				

Weed Type	All	A	B	C	Connectiveness	All	A	B	C
Annual pasture grass and flat weeds	√				Part of Larger Remnant				
Perennial pasture grass	√				Linked (linear link)		√	√	√
Woody weeds					Clustered		√	√	
					Cleared				

List main weed species if known: Phalaris, Cape Weed, Paterson's Curse, St. John's Wort, Brome.

Overstorey	All	A	B	C	Ground Layer	All	A	B	C
Open Forest					Grassy/weedy	√			
Woodland					Shrubby				
Sparse – occasional tree		√	√		Rush/Sedge		√		
Some clumps			√		Herb				
					Bare				

Structural Characteristics	All	A	B	C
Tree regrowth			√	
Shrub layer <1m				
Shrub layer >1m				
Tree hollows			√	
Fallen timber				

Key to Rating System:

Vegetation: High – near natural – few weeds.
 Med/High – near natural – weeds common.
 Med – some native grasses and forbs.
 Med/Low - only some hardy native grasses.
 Low - dominated by weeds.

Habitat: High - near natural (LHB trees, shrubs, logs, regeneration).
 Med/High - near natural (one major component missing).
 Med - several components missing (LHB trees and weedy)
 Med/Low – occasional LHB tree.
 Low - cleared paddock.

Linkage significance: High - part of larger remnant, connects 2 remnants.
 M/H - creekline, timbered roadside
 M - partial link between 2 remnants.
 M/L - small patch < 500m from another remnant.
 L - isolated > 500m from another remnant.

- Key to Plant List (Page 1):**
1. Sparse – scattered, occasional occurrence.
 2. Common – regular occurrence throughout.
 3. Abundant – major lifeform on site.

Summary of Habitat and Rating:
 B = Medium, A=Med/Low but dam has good aquatic plants & frog habitat
 C=Med/Low

Summary of Connectivity & Rating (linkage)
 C=Med/Low, A=Med/Low, B=High
 E=Medium

Fauna of the AWH Area

	All	A	B	C		All	A	B	C
Australian Hobby					Magpie-Lark				
Australian King-Parrot					Masked Lapwing				
Australian Magpie		√	√		Mistletoe Bird				
Australian Magpie-Lark					Musk Lorikeet				
Australian Owlet-Nightjar					Nankeen Kestrel		√		
Australian Raven			√		Noisy Friarbird				
Australian Shelduck					Noisy Miner			√	
Australian Wood Duck					Olive-backed Oriole				
Barn Owl					Pacific Black Duck		√		
Black-chinned Honeyeater					Painted Button-Quail				
Black-eared Cuckoo					Pallid Cuckoo				
Black-faced Cuckoo-Shrike			√		Peaceful Dove				
Black-shouldered Kite					Peregrine Falcon				
Blue-faced Honeyeater					Pied Currawong				
Blue Wren					Rainbow Bee-eater				
Brown Falcon					Red Wattlebird			√	
Brown Goshawk					Red-browed Finch				
Brown Thornbill					Red-capped Robin				
Brown-headed Honeyeater					Red-rumped Parrot				
Brown Treecreeper					Restless Flycatcher				
Buff-rumped Thornbill					Richard's Pipit				
Collared Sparrowhawk					Rufous Songlark			√	
Common Bronzewing					Rufous Whistler				
Common Starling					Sacred Ibis				
Crested Pigeon			√		Sacred Kingfisher				
Crested Shrike-Tit		√	√		Scarlet Robin				
Crimson Rosella					Shining Bronze Cuckoo				
Diamond Firetail					Silvereye				
Dollarbird					Southern Boobook				
Dusky Woodswallow					Southern Whiteface				
Eastern Rosella			√		Speckled Warbler				
Eastern Spinebill					Spotted Pardalote				
Eastern Yellow Robin					Striated Pardalote				
Fan-tailed Cuckoo					Striated Thornbill				
Fairy Martin					Sulphur-crested Cockatoo				
Flame Robin					Tawny Frogmouth				
Fuscous Honeyeater					Tree Martin				
Galah					Varied Sitella				
Gang-gang Cockatoo					Wedge-tailed Eagle				
Golden Whistler					Weebill				
Grey Butcherbird					Welcome Swallow		√	√	
Grey Fantail					Western Gerygone				
Grey Teal					White-throated Gerygone				
Grey Shrike-thrush					Whistling Kite				
Hooded Robin					White-plumed Honeyeater		√	√	
Horsfield's Cuckoo					White-throated Treecreeper				
Jacky Winter					White-winged Triller				
King Parrot					White-bellied Cuckoo-shrike				
Laughing Kookaburra		√			White-naped Honeyeater				
Leaden Flycatcher					White-winged Chough				
Little Eagle					Willie Wagtail		√	√	
Little Friarbird					Yellow Rosella				
Little Lorikeet					Yellow Thornbill				
Little Raven					Yellow-rumped Thornbill				
					Yellow-tufted Honeyeater				
Other including Mammals & reptiles:									
Common Froglet		√			Common Brush-tail Possum			√	
Spotted Marsh Frog		√			Ring-tail Possum			√	
Peron's Tree Frog		√			Squirrel Glider		√	√	
Pobblebonk			√						

Summary of Wildlife (include species of special interest):

Low bird diversity but known recordings Site 1 for Regent Honeyeater, Site 2 Diamond Firetail, Speckled Warbler (I. Davidson, 2003) and recordings within last ten years Of Hooded Robins (G. Datson). Squirrel Glider has NSW listing under TSC Act.

Fire hazard vegetation type (refer to map):

Low fire risk, Vegetation 2.

Specific management recommendations:

Clearing/retention:

A= retention of corridor minimum of 20 m wide between Trek 31 Caravan Park and FTP Block south of Vickers Rd.
Retention of a 20m corridor between Dam F and transmission easement for Squirrel Glider linkage.

B= retention of corridor to link with roadside corridor and retention of scattered remnant trees where possible to link with roadside
And large FTP block south of Vickers Rd. Any trees retained on dev. Site will require a specific management plan in agreement with ACC.

Grazing/Fencing:

Fencing of all retained corridors (D,E, C and eventually G, and a buffer around remnant trees of F if possible to protect remnants and allow enhancement plantings. Allow for potential access locations off Vickers Rd.

Revegetation/Type: (Refer to Strategy)

C= Reveg with riparian species of structural diversity.
A= Plant shrubs into retained corridor (E).
B= Plant shrubs of Box-Gum Woodland species into retained corridor (D).

Weed management:

e.g. Creeklines, refer to Strategy

C, D, E= requires weed management

Pest animals/Control:

Hare

Threatened species management:

Squirrel Glider = Protection of remnant trees including other roadside trees and clumps to north and east of site to provide for den and roost sites which are essential for species survival. Enhancement plantings to provide foraging resource diversity.

Other:

THREATENED SPECIES PROFILE

Appendix 3.

Petaurus norfolcensis (Squirrel Glider)

The landscape of much of the Thurgoona and Lavington areas of Albury is characterised by a mosaic of remnant *Eucalyptus* woodland, cleared farmland, scattered large old trees in paddocks and blocks of forward tree planting and areas of urban development. Remnant woodland occurs as strips along roadsides or streamsides, as many small patches in paddocks and a single large block (Bell's Travelling Stock Reserve). This patchwork of remnant and revegetated woodland provides habitat for the Squirrel Glider *Petaurus norfolcensis*. The Squirrel Glider is a small gliding marsupial whose primary habitat in south-eastern Australia is the woodlands of the south west slopes of NSW and northern plains of Victoria. Squirrel Gliders are listed as vulnerable in NSW and threatened in Victoria because a large proportion of their preferred habitat has been cleared for agriculture. Consequently, Squirrel Gliders are reliant on small and isolated patches of habitat for their survival (van der Ree, 2003).

Apparently not well documented outside of Victoria (Maxwell et al 1996), the Squirrel Glider occurs in a broad band from Cape York Peninsula (Qld) to central Victoria, extending to the coastal side of the Great Dividing Range between southern Queensland and central NSW. It is apparently more abundant in coastal forests of northern NSW and south-eastern Queensland than inland of the Great Dividing Range or in southern parts of its range (Maxwell et al 1996).

The Squirrel Glider *Petaurus norfolcensis* is a small-medium sized (200 – 350 gm) gliding possum that was once common across large areas of eastern and southern Australia. Its preferred woodland habitat coincides with fertile soils, highly suited for agriculture. As a result, most habitat for Squirrel Gliders in south-eastern Australia has been cleared (Menkhorst *et al.* 1988). In particular, most of the woodlands on the inland slopes of the Great Dividing Range in New South Wales and Victoria have been cleared, and most remaining habitat occurs as small patches of woodland or as linear strips along watercourses and roadsides. In areas adjacent to cities and towns, the species may be further threatened by inappropriate urban development (van der Ree, 2003)

Based on current habitat preferences, it is certain that the area of suitable habitat on the inland slopes of the Great Dividing Range and along water-courses in the NSW and Victoria Riverina has declined significantly. In these areas, Squirrel Gliders are now confined to isolated patches of remnant vegetation, often severely degraded and with little or no regeneration of trees and shrubs. Present overall distribution has not significantly changed but the population is fragmented and probably in steady decline in areas with predominantly pastoral or agricultural land use. It also has suffered a loss of habitat in NSW north of Sydney, due to coastal development. The Squirrel Glider inhabits dry open forest and woodland, including Box-Ironbark, Blackbutt-Bloodwood, Grey Gum-Grey Ironbark-Spotted Gum and River Red Gum communities; tall coastal forest and Banksia woodland in the north-east of its distribution; and Ironbark-Lemon-scented Gum-Forest Red Gum associations in north Queensland (Maxwell et al 1996).

In central Victoria the Squirrel Glider feeds on insects, the gum produced by Acacias, the sap from certain Eucalypts, nectar and pollen. It also eats the green seeds of the Golden Wattle. When nectar is unavailable, greater use is made of Eucalypt sap and Acacia gum. Usually found nesting in a bowl-shaped, leaf-lined tree nest in a tree hollow, a typical family group is comprised of one mature male, one or more adult females and their associated offspring for the season (Strahan 1995).