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FLORA & FAUNA ASSESSMENT
Lots 101, 102, 132, No. 2, 7, 8, Hawthorn Rd
Bargo

April 2003

CERTIFICATION

Preliminary Fauna and Flora Assessment, Assessment of Significance: Cumberland Plain Woodland, *Phascolarctos cinereus*

Prepared by :-
Name : Joy Hafey
Qualifications : B. A. Sc

I hereby certify that I have prepared the contents of this assessment
And to the best of my knowledge, it is true in all material particulars
And does not, by its presentation or omission of information, materially mislead

Signature..Joy Hafey.....
Name...**Joy Hafey**.....
Date.....14-4-03.....

Plate 1: Easterly aspect across Lots 101 and Lot 102

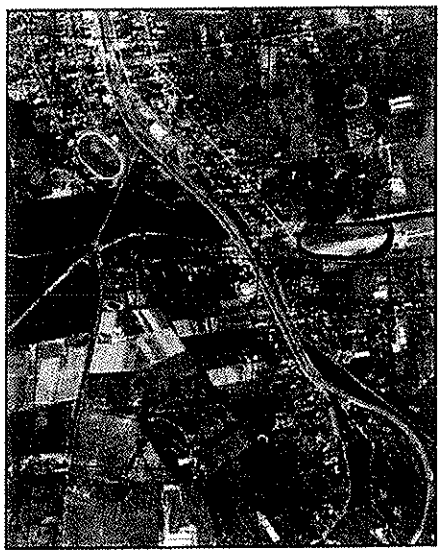
Plate 2: Easterly aspect across Lot 102 and no. 2

Plate 3: South easterly aspect across no. 7

Plate 4: South westerly aspect across no 8

Plate 5: South westerly aspect across Lot 132

Map 1: Location of the Proposed Development
The study site is located on the perimeter of the Bargo residential area



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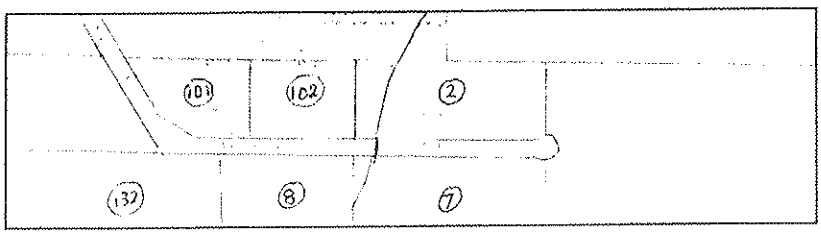

Figure 1: The Study Sites
The individual sites are circled

2.2 Landform
Bargo is located on the Woronora Plateau / Nepean Ramp between the Southern Highlands and the Nepean River System. The properties are relatively flat and slope gently towards a north south drainage line running through number 2 and 7. Average elevation is 350m a.s.l.

2.3Geology & Soils
Bargo is part of the Sydney Basin, which is underlain by Triassic sediments, Hawkesbury Sandstone & Wianamatta Group of Triassic sedimentary rocks. Soils on site are podzols and of moderate fertility.

2.4Climate
The mean annual rainfall for the area is low, 800mm. Temperature data shows the area has a maximum of 48.4C and minimum of 8.3C recorded. Mean maximum temperature is 28.5C for January and mean minimum for July 17C (Bureau of Statistics 1979). Frosts are a common feature of the winter months.

3.0 METHODOLOGY

A literature review was carried out to ascertain the conservation significance of plant and animal species, plant communities and animal habitats in and near the study area.

The assessment was carried out to determine whether further investigation was necessary with regard to species that are listed in the Threatened Species Conservation Act 1995 and which may potentially be present on the study site. Shale/Sandstone Transition Forest, S.S.T.F. an endangered ecological community, is prevalent throughout the area as is the Cumberland Plain Woodland (CPW). The area is habitat to *Persoonia bargoensis* an endangered species. The field survey was conducted in March and April by Wirrimbirra Consultants.

3.1 Flora Methodology

Transect lines were walked and the vegetation noted. Subjective visual inspections and assessment of vegetative biodiversity was noted.

3.2 Fauna Methodology

Small Ground Animals were surveyed by trapping with 20 Elliott traps, baited with rolled oats/peanut butter and honey. Traps were set in the evening and retrieved the following morning. Any captured animals were released at the point of capture.

Aboreal Animals were sampled by opportunistic sightings on all visits to the site. Observations of scats, scratchings, diggings etc, indicating the present of these animals, were noted and recorded

Amphibians were noted by listening for calls during each visit and by searching in habitat areas, e.g. under timber and rocks

Reptiles were sampled by turning over debris during each visit to the site

Avifauna were sampled by opportunistic sightings and listening for calls during each visit to the site.

Bats were sampled by opportunistic sightings during night visits to the site.

Large ground animals were sampled by opportunistic sightings on all visits to the site. Observations of scats, scratchings, diggings etc. indicating the presence of these animals, were noted and recorded.

4.0 FLORA AND FAUNA RESULTS

The literature review, conducted to assess the potential diversity and abundance of flora and fauna species in area, included the following

- NSW NPWS Atlas
- Wollondilly Shire Council Threatened Species Publication
- Australian Museum Records
- Bargo River Issues Paper
- State of the Environment Report Wollondilly Shire Council 1997

There are 28 threatened flora species and 16 threatened fauna species occurring in the region of the study site.

The site is depurate in native fauna and flora species with 109 flora species (23 exotic) and 44 fauna species noted. Appendix 2 and 3 list species noted. Weed invasion is moderate and consists primarily of exotic grasses eg *Paspalum paspaloides* (Paspalum) and *Pennesetum clandistina*(Kikuyu).

4.1 Flora Survey Results

The six properties formed part of a former rural holding. The area is therefore considerable modified with clearing of the original vegetation. The majority of site is mown grassland, with a scattering of trees.
Small linear strips of native vegetation line the rear boundary of the properties.
The canopy species includes *Eucalyptus fibrosa, E. crebra, E. punctata, E. amplifolia* and *E.globoidia.* Some old growth trees reaching to a height of 30 m with a girth of 2m, are significant habitat trees.

The understorey is very sparse and consists predominantly of scattered *Bursaria spinosa.* The ground cover is a mix of exotic and native grasses.

The drainage depression running across no. 2, 7, and 8, gives rise to a high proportion of mesoic species eg. *Melaleuca linearifolia, Melaleuca thymifolia* and *Melaleuca stypheloides.*

There is some juvenile recruitment occurring in the sections of native vegetation adjacent to the rear boundaries of the properties.

Note: *Eucalyptus punctata, E.amplifolia, E. crebra, E.fibrosa* and *E. tereticornis*, S.E.P.P. 44 tree species were identified on the survey site.

Note: Species characteristic of Cumberland Plain Woodland were identified on the study site.

Note: No threatened plant species were identified on the survey site

4.2 Fauna Results

The habitat potential of the site is limited with little native vegetation present. The mature trees provide the most important habitat potential. In total there were 11 faunal and 23 avifaunal species noted on the survey site.

No small animals were trapped or observed during site visits. Given the disturbed nature of the site, the area is likely to be depurate in small fauna.

Other animals were in evidence.

- Sugar gliders were heard of a night.
- Rabbit, cat and fox scats were found.
- A possom, dogs, cats and insectivorous bats were observed.

Reptiles were not abundant and the only species noted were Garden Skinks, *Lamprophalis delicata.*

Three amphibians were identified by vocalisation as, *Crinia signifera, Lymnodynastes peronii & Uperolea lavigata,* all common species.

Avifauna, a total of 23 bird species were recorded, by observations or identification of calls on site visits. This is indicative of the habitat available in the canopy species and the open grassland on the survey site.

Note: Koalas have been recorded in the immediate vicinity (Close R 2000, Hallowell M.) Food trees for this species, have been identified on the study site, *Eucalyptus punctata, E.amplifolia, E. crebra, E.fibrosa* and *E. tereticornis*,. Therefore the site is subject to S.E.P.P.44 legislation ie. the site is Potential Koala Habitat

No threatened faunal species were identified on the survey site

5.0 Potential Koala Habitat

The presence of several SEPP 44 trees, qualifies this site as Potential Koala Habitat. There are a significant number ie. more than 15 % of the total number of trees in the upper and lower canopy, to consider that this site constitutes Koala habitat. However it is most unlikely that the site constitutes Core Koala Habitat, because of the following reasons-

1) There is limited vegetation on the survey site
2) An extensive search of the trees failed to find evidence of there presence.

It is documented that there is a Koala corridor through the township of Bargo between extensive bushland to the west and east of the township (Close R. Hallowell M. pers. com.). Roadkills on Rememberance Dr. and the M5 confirm this, as does recent sightings of Koalas in Johnson and Kadar Streets.

6.0 Recommendations and Discussion (Preliminary Fauna and Flora)

While the proposed development is of a limited nature and given the present disturbed nature of the site, the following points need to be considered.

*It is considered that the remnant vegetation on the survey site, is Cumberland Plain Woodland,an endangered ecological community. Thirty one species characteristic of this community were identified. Therefore an Assessment of Significance ie an " Eight Part Test" be applied to address the impact of the proposed development on this endangered ecological community.

*The presence of S.E.P.P. 44 tree species and possible visitations by Koalas, needs further investigation and an " eight part test" needs to be applied.

*The habitat potential of the site is low and is influenced by the following aspects:

- There is not a diverse or abundant vegetative community
- The structure of the vegetative community is limited
- There are only a small number of mature trees with hollows and forks.
- There are no waterbodies to provide habitat areas
- There is little litter or hollow logs
- The open grassland is either mown lawn or grazed by domestic animals

There are some positive aspect which relate to the site

- There is loose connectivity to significant wildlife areas to the east and west
- There is a small drainage line through the site
- There are significant mature trees on the site.

With development of the site, habitat potential could be significantly improved by the landscaping of new residences with native species.

7.0 Assessment of Significance :
The Assessment of Significance or "eight part test" applies a number of questions that need to be answered, so that determining and consent authorities may be able to gauge, whether a proposed development is likely to have a significant affect on threatened species, populations or ecological communities.

7.1 Cumberland Plain Woodland
Over the last 200 years, the species diversity and abundance of the Sydney bioregion has been considerably reduced. *Homo sapiens* now number 4 million in Sydney and pressure is increasing, continually, to take over more native habitat. Thus, the remaining native faunal species have been pushed into smaller and smaller remnants of bushland and the extinction, of many fauna and flora species has occurred from this region. The remnants of bushland that remain, are often degraded and there are negative implications with regard to the gene pool of such small populations. Species characteristic of CPW are listed below in the appendix

C.P.W. was listed as an endangered ecological community because of the following reasons

I).The floristic uniqueness
II).The endangered conservation status ie 94% of C.P.W. has been cleared over the past 200 years (Benson & Howell 1992). Of the remaining 6%, only .15% is currently protected in the National Parks Estate and reserves. Much of the C.P.W survives as remnant patches, which are often badly degraded. Remnants of all sizes are important – a survey of a 1.5 ha patch yielded 78 native species (U.B.B.S.1997).
III).The on-going threatening processes etc clearing for agriculture, urban development, invasion of exotic plants and increased nutrient load, will see the extinction of this unique ecological community (U.B.B.S. 1997)

Cumberland Plain Woodland is the name given to the ecological community that occurs on areas, with soils derived from shales and lies within or on the fringes of the Cumberland Plain.

C.P.W. is listed as an Endangered Ecological Community on Part 3 of Schedule 1 of the Threatened Species Conservation Act 1995

C.P.W. is characterised by having at least one of the following canopy tree species as dominant,*Eucalyptus crebra, E.tereticornis,E.molucanno, E.eugenoides, E.fibrosa, E. maculata or Angophora floribunda* (U.B.B.S.)

C.P.W. is characterised by a woodland structure, which includes open areas and dense areas. The understorey is usually grassy to herbaceous with patches of shrubs. Canopy height is from 10-20m and canopy cover is from 10-30% N.P.W.S)

The C.P.W. community occurs within the L.G.A. of Auburn, Bankstown, Balkham Hills, Blacktown, Camden, Campbelltown, Fairfield, Hawkesbury, Holroyd, Liverpool, Paramatta, Penrith and Wollondilly.

Threats to the C.P.W. include-

- clearance for agriculture
- grazing and other agricultural activities
- urban and rural developments
- invasion by exotic plants
- predation by feral animals
- increased nutrient load

It has been stated that C.P.W. will be extinct if pressures on it are not alleviated (U.B.B.S.)
It has been hypothesised that destruction of C.P.W. will be due to a "death by a thousand cuts" (Freimanis 1998) by various degrading processes such as agriculture and urban development.

Assessment of Significance : "Eight part test "
Cumberland Plain Woodland-

The eight part test applies a number of questions that need to be answered, so that determining and consent authorities may be able to gauge, whether a proposed development is likely to have a significant affect on threatened species, populations or ecological communities.

A) In the case of a threatened species, whether the lifestyle of the species is likely to be disrupted such that a viable local population of the species is likely to be placed at risk of extinction.

Little remains of the endangered ecological community of CPW such that the lifestyles that make up the community, are already significantly disrupted. The development is therefore not likely to have any significant impact

B) In the case of an endangered population, whether the lifecycle of the species that constitutes the endangered population is likely to be disrupted such that the viability of the population is likely to be significantly compromised

The endangered ecological community of CPW is already significantly disrupted by past agricultural use so that little remains of it.

C) In relation to the regional distribution of the habitat of a threatened species, population or ecological community, whether a significant area of known habitat is to be modified or removed.

Less than 6% of the original C.P.W. remains with only .15% of this conserved in conservation areas, a total of 2300 ha. The property covers an area of approximately 30 acres and contains few mature native trees, all of which can be retained.

D) Whether an area of known habitat is likely to become isolated from currently interconnecting or proximate areas of habitat for a threatened species, population or ecological community.

The study area is rural residential and is already significantly cleared.

E) Whether critical habitat will be affected.

The survey site does not involve critical habitat.

F) Whether a threatened species, population or ecological community, or their habitat, are adequately represented in conservation reserves (or other similar protected areas) in the region.

Conservation Status (W.Sydney) is unconserved, C.A.R.Assessment is endangered on a national, state and regional basis. (U.B.B.S.) This community is represented in the reserves of The Western Sydney National Park, Scheyville NP, Cattai NP

G) Whether the development or activity proposed is of a class of development or activity that is recognised as a threatening process.

Under Schedule 3 of the Threatened Species Conservation Act 1995, threatening processes listed for the CPW. include clearing and the removal of trees In this instance, it is not considered that this development constitutes a threatening process to the CPW as the trees of this community will remain.

H) Whether any threatened species, population or ecological community is at the limit of its known distribution.

The distribution of this endangered ecological community does reach the known limit of its distribution within this study area. C.P.W. reaches west to Penrith, south to Picton, east to Appin and north to the Hawkesbury River.It is therefore considered that the CPW is at the limit of it's southerly range.

7.2Test of Significance " Eight part test Koala(*Phascolarctos cinereus)*

Conservation Status - Vulnerable

Habitat Requirements of Koalas
Studies by Associate Professor Robert Close and Stephen Ward of U.W.S. have recently mapped Koala movements in the Wedderburn area. It was noted that an adult male Koala can range over an area of 200 ha., while a female has a habitat range of 15-20 ha. (Close 1999).
An adult Koala needs approximately 100 food trees for its survival and consumes approximately 500 grams of leaves a day, (Serventy 1989). This varies immensely however as a feature of, type and nutrient content of individual trees. In the Wedderburn area, they have been identified as feeding on the following eucalyptus, *Eucalyptus punctata, E.agglomerata, E.piperita.E. crebra and E.multicaulis.*
Breeding season sees a marked increase in travel time and distance, particularly amongst the male of the species.

Threats include, habitat removal and degradation, predation and traffic.

" Eight Part Test" *Phascolarctos cinereus*

A) In the case of a threatened species, whether the lifecycle of the species is likely to be disrupted such that a viable local population of the species is likely to be placed at risk of extinction.

It is unlikely that the lifecycle of *Phascolarctos cinereus* will be disrupted, such that a viable local population, is likely to be placed at risk of extinction, as the proposed development is outside the areas, where the population is found.

B) In the case of an endangered population, whether the lifecycle of the species that constitutes the endangered population is likely to be disrupted such that the viability of the population is likely to be significantly compromised

The lifecycle of the species is not likely to be disrupted, as no significant impacts are likely with the development. No feed trees will be removed from the development site.

C) In relation to the regional distribution of the habitat of a threatened species, population or ecological community, whether a significant area of known habitat is to be modified or removed.

There will be little modification and existing trees will be maintained.

D) Whether an area of known habitat is likely to become isolated from currently interconnecting or proximate areas of habitat for a threatened species, population or ecological community.

The development will not isolate or impact on any interconnecting or proximal areas.

E) Whether critical habitat will be affected.

The survey site does not involve critical habitat.

F) Whether a threatened species, population or ecological community, or their habitat, are adequately represented in conservation reserves (or other similar protected areas) in the region.