EMIRATES WOLGAN VALLEY RESORT AND SPA

Flora and Fauna Assessment for the Upgrade of Power Services

For:

HLA-ENVIROSCIENCES

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Final Report

Cumberland Ecology
PO Box 2474, Carlingford Court 2118

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Approved by:	David Robertson
Position:	Project Director
Signed:	David Robertson
Date:	*17 November, 2006*

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PURPOSE

Cumberland Ecology have been engaged by HLA Envirosciences to provide flora and fauna impact assessments for power services; the construction of an 11kv powerline, for the Emirates Wolgan Valley Luxury Resort and Spa, in Wolgan Valley, Lithgow City Council.

The objectives of this flora and fauna assessment include:

- To describe vegetation communities in proposed powerline corridor impact zone;
- To describe fauna habitats in proposed powerline corridor impact zone;
- To assess the likelihood that threatened flora and fauna could occur; and
- To formally assess the impacts of the proposed development as required under Section 5A of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and determine the need for a Species Impact Statement (SIS).

METHODS

For the purposes of this report the ecological survey was undertaken in the impact zones of the upgraded and new powerline corridor. This included the existing tower sites at the top and bottom of the valley, where further clearance may be required for the upgraded structures and the proposed extension of the existing line to construct new poles within Ben Bullen State Forest and Wolgan Road verge.

The corridor sections contained, or were adjacent to, previously cleared areas as well as natural and modified bushland.

An inspection was made of the corridor in order to determine the nature and condition of the vegetation present and whether any threatened flora occurred in an area that was likely to be affected by the proposed development. The inspection comprised traversing the corridor, with detailed inspection or survey being done in locations of possible significance.

Plant communities were described based on the dominant canopy species and community structure, according to Specht (1970). These were related to plant communities described

by Benson & Keith (1990) for the Wallerawang 1:100000 map sheet. Plant species nomenclature conforms to Harden (1990-93).

In conjunction with the flora survey, a fauna habitat assessment was conducted along the entire proposed powerline corridor route. Potential fauna habitats where threatened species could be present were assessed for important indicators of habitat suitability, including known species of feeding trees and shrubs and occurrence of such features as wetlands, creeks, tree hollows and fallen logs.

RESULTS

Vegetation

The vegetation in the section where a powerline is to be constructed had been largely cleared in the road reserve and scattered mature trees occurred in numerous locations. The land adjoining the road reserve contained bushland in several areas, separated by exotic and native pasture. It would be necessary to remove or trim numerous trees adjacent to the road reserve to provide adequate separation between the overhead cable and nearby vegetation. In most locations pasture occurs on the opposite side of the road to bushland. It would be possible to locate the powerline in these areas in the pasture rather than bushland and avoid any impact to that bushland. Large individual remnant trees occur in some sections of pasture and should be avoided where possible.

Some sections of Talus-slope Woodland shared some features with the endangered ecological community: White Box-Yellow Box-Blakelys Red Gum Grassy Woodland. It was difficult to show clearly on the basis of floristics that that the communities were not identical owing to the lack of ground cover species due to the drought. Despite this limitation, the presence of or proximity to species that are not associated with this community indicated that Yellow Box-White Box Grassy Woodland was not present. A quadrat was survey in this location, and the community was concluded to be a variant of Talus-slope Woodland.

One specimen of *Persoonia marginata* (Clandulla Geebung), listed under Schedule 2 of the TSC Act as being vulnerable, was recorded on the road margin. The specimen was located on the eastern side of the road less than one metre from the road surface, in the location of the proposed corridor.

Fauna Habitat Values

Fauna habitat values in the powerline corridor are limited, particularly along the valley floor. Clearing of woodland in this area is likely to be minimal, and is not expected to reduce habitat areas substantially for any threatened fauna species which may occasionally utilise roadside vegetation. A small number of mature Eucalypts with hollows will be cleared in these sections which provide potential roosting habitat for microbats but

none of the hollows are large enough to provide nesting habitat for large forest owls or cockatoos.

The lower slopes and part of the valley floor below Wolgan Gap provide extensive fauna habitats with less past and present disturbance than the rest of the powerline corridor on the valley floor. Clearing in these sections will be limited to the existing powerline corridor in the road section, where trimming occurs for present maintenance. The two tower locations have previously been cleared for the establishment and maintenance of the existing towers.

RECOMMENDATIONS AND CONCLUSIONS

The impact on native flora in the powerline and pipeline corridors is expected to be minor and could be minimised if the recommendations regarding final route selection, rehabilitation and offsets for loss of bushland are implemented. No endangered ecological communities were identified in the impact zones, and only one individual plant of a threatened species; *Persoonia marginata* (Clandulla Geebung) was recorded in the impact zone, at the edge of Wolgan Road and pasture. This individual would not represent a viable population and the proposed clearing would not threaten the survival of a local population.

Fauna habitats at the roads edge are limited in most places along the proposed powerline corridor route, and the use of existing poles in the upper section of the line should ensure that vegetation which is part of more extensive tracts of woodland, within Ben Bullen State Forest, will remain no more disturbed than is currently required for maintenance.

It is recommended that:

- All bushland and individual large trees be retained in the final powerline and route where possible;
- Any loss of trees should be compensated for by replacement with suitable species; in other appropriate locations;
- A pre-construction inspection should be made of the specific locations of power-poles to ensure minimal impact on bushland and potential fauna habitat tree will be incurred; and
- A fauna protection protocol should be prepared and all works staff briefed on the potential risks to fauna and the requirement to follow other environmental protection protocols. During vegetation clearance, felling of trees should be supervised by a wildlife rescue expert or ecological consultant.

No significant impacts on species or ecological communities listed on the NSW TSC Act or the Commonwealth EPBC Act have been predicated in terms of the assessments of Significance, as provided in Appendix B. No Species Impact Statement or referral to the

Department of the Environment and Conservation is required to assess these species further.

Chapter 1

Introduction

1.1 Purpose

Cumberland Ecology have been engaged by HLA Envirosciences to provide flora and fauna impact assessments for the upgrade of power services for the Emirates Wolgan Valley Luxury Resort and Spa, in Wolgan Valley, within the Lithgow City Council area.

The project will involve the construction of an 11kv powerline extending from Wolgan Gap to the resort site. An existing line occurs along part of the route which can be upgraded by replacing the tower at the top and the first two towers at the bottom of the escarpment, and restringing the existing poles along Wolgan Road.

This report is part of an Environmental Assessment (EA) which has been prepared by HLA to address all environmental impacts of the proposed project.

This report provides the assessments required under Section 5A of the *Environmental Planning and Assessment Act 1979* (EP&A Act) of the potential significance of the proposed development upon threatened flora and fauna. Recommendations have been included to minimise the impact of the powerline upgrade and construction on bushland.

The objectives of this flora and fauna assessment include:

- To describe vegetation communities on the subject site;
- To describe fauna habitats on the subject site;
- To assess the likelihood that threatened flora and fauna could occur on the subject site; and
- To assess the impacts of the proposed development in terms of Section 5A of the EPA Act (the so-called seven part test) and determine the need for a Species Impact Statement (SIS).

1.2 Terminology

This report uses the following terminology:

- **Subject site** is the area of proposed works;
- **Study area** is the subject site and any additional areas that are likely to be affected by the proposal, either directly or indirectly.

1.3 Background

Wolgan Valley lies just to the east of the Great Dividing Range and encompasses a number of National Parks (NP), which make up part of the Greater Blue Mountains World Heritage Area including Gardens of Stone NP and Wollomi NP.

The Powerline corridor includes existing and proposed extension sections within Ben Bullen State Forest and Wolgan Road verge. The main impact zone of the powerline corridor contains, or is adjacent to, previously cleared areas as well as natural and modified bushland.

Chapter 2

Methods

2.1 Vegetation Survey

An inspection was made of the entire corridor, although efforts were focused on the proposed new section of the corridor, in order to determine the nature and condition of the vegetation present and whether any threatened flora occurred in the area that is likely to be affected by the proposed development. The inspection comprised traversing the corridor, with detailed surveys being completed in locations of possible significance.

Plant communities were described based on the dominant canopy species and community structure, according to Specht (1970). These were related to plant communities described by Benson & Keith (1990) for the Wallerawang 1:100000 map sheet. Plant species nomenclature conforms to Harden (1990-93).

The potential conservation significance of communities and species was based on the listings under the Threatened Species Conservation Act 1995 (TSC Act) Schedules and the Environmental Protection & Biodiversity Conservation Act 1999 (EPBC Act) and in Briggs & Leigh (1995) and Benson & Keith (1990).

2.1.1 Limitations of Survey

The survey was conducted during one site visit in October 2006. At the time of the survey the weather conditions had been unfavourable for plant growth and production of features required for identification of most species. Many of the ground cover species were difficult or impossible to identify as they had become desiccated or died because of the prolonged drought prior to the survey.

Owing to the dry conditions and the survey being limited to a single inspection of any one location within this study area, it was impossible to identify all plants present to species level. Despite this, it is probable that sufficient species have been recorded to enable issues including conservation significance of the flora, condition and viability of bushland and likely impact on native vegetation to be satisfactorily assessed. However, a list of potential threatened species occurring in the habitats present was used in conjunction with habitat inspections and examination of identifiable vegetative samples to ascertain whether the species/communities present were likely to represent threatened components.

2.2 Fauna Habitat Assessment

The entire length of the powerline corridor was inspected for fauna habitat values. In particular, potential habitats where threatened species could be present were assessed for important indicators of habitat suitability, including known species of feeding trees and shrubs and occurrence of such features as wetlands, creeks, tree hollows and fallen logs. Notes were also made about the structural complexity of vegetation, the age composition of the woodland and the nature and extent of human disturbance in various parts of the study area.

Chapter 3

Results

3.1 Vegetation

3.1.1 Existing powerline corridor

The transmission tower on the edge of the sandstone plateau was in an area that was largely cleared, as shown in Photograph 3.1, containing regenerating native species from the adjoining bushland. Species included: *Cassinia arcuata*, *Poa sieberiana*, *Podolobium ilicifolium* (Native Holly), *Hakea dactyloides*, *Patersonia sericea* (Purple Flag) and *Lomandra multiflora* (Many-flowered Mat-rush).

The adjoining bushland contained the same species with a canopy of *Eucalyptus sparsifolia* (Stringybark), *Eucalyptus mannifera* (Brittle Gum), *Eucalyptus dives* and *Allocasuarina littoralis* (Black She-oak). Exotic species were rare at this site and limited to a few ground cover species.

Photograph 3.1 A view into Wolgan Valley from the top tower at Wolgan Gap.

The first two transmission tower locations in the valley were located on two stony rises with silty sandy soil, as shown in Photograph 3.2. The vegetation had largely been cleared from the vicinity of the transmission towers but was regenerating and contained some plants up to three metres in height. Species included: *Cassinia arcuata*, *Podolobium ilicifolium*, *Acacia buxifolia*, *Lissanthe strigosa* (Peach Heath), *Bursaria spinosa* (Blackthorn) and *Lomandra* spp.

The surrounding forest comprised *Eucalyptus punctata* (Grey Gum)-*Eucalyptus melliodora* (Yellow Box)-*Eucalyptus blakelyi* (Blakelys Red Gum) open forest and woodland.

No threatened species were recorded in the existing powerline corridor.

Photograph 3.2 **A view north-east from the first tower location in the valley. The second valley tower can be seen in the background. Note the shrubs but no trees which occur in this existing corridor.**

3.1.2 Proposed powerline corridor extension

The vegetation in the section where a powerline corridor is proposed to be constructed had been largely cleared in the road reserve, although numerous scattered mature trees were present. The land adjoining the road reserve contained bushland in several areas, separated by exotic and native pasture, as shown in Photograph 3.3. The proposed powerline would require clearing of trees in some locations.

Photograph 3.3 **A typical example of survey section 3 where a cleared road verge adjoins pasture land on the northern side of the road.**

The bushland adjoining the powerline and road corridors in Wolgan Valley comprised variants of Talus-slope Woodland (Benson & Keith, 1990). Some sections of Talus-slope Woodland shared some features with the endangered ecological community: White Box-Yellow Box-Blakelys Red Gum Grassy Woodland; however this community was concluded to be a variant of Talus-slope Woodland. Canopy species included: *Eucalyptus melliodora*, *Eucalyptus fibrosa* (Broad-leaved Ironbark), *Eucalyptus eugenioides* (Thin-leaved Stringybark), *Eucalyptus punctata* (Grey Gum), *Eucalyptus rossii* and *Eucalyptus blakelyi*. *Eucalyptus albens* (White Box) was recorded in the widest section of the valley, west of the proposed resort property gate.

3.2 Fauna Habitats

Vegetation within the Wolgan Valley consists of largely native species that have regrown since extensive clearing mid last century for farmland. Consequently, much of the powerline corridor and directly adjoining areas are either devoid of native vegetation, particularly in locations where agricultural land borders the road corridor, or have limited vegetation structure.

For ease of description, the powerline corridor has been divided into sections. Habitat features of these sections are shown in Figure 3.1:

3.2.1 Section 1 (mainly cleared agricultural land immediately after the resort site gate)

The area of habitat for native fauna is minimal is this section as the majority of native vegetation has been cleared in and adjoining the road reserve. Some small bird species may forage in the pasture area. No threatened species have potential habitat in this section.

3.2.2 Section 2 (open woodland adjoining the road verge)

Canopy trees in this area offer some small hollows for nesting of small birds and microbats, however connectivity to tracts of woodland is poor as these areas are within agricultural properties. Flowering Eucalypts occur in this area including Yellow-box and a small number of White-box. The understorey is sparse but generally contains all strata.

3.2.3 Section 3 (area of woodland both sides of road)

In this section woodland connectivity is far better than Sections 1 and 2; however, there is an already cleared road verge of sufficient width for the powerline corridor to be contained within it. Habitat values in this section are high due to connectivity with Ben Bullen State Forest. Flowering Eucalypts occur in this area including Yellow-box and some White-box. The understorey was sparse at the time of survey, possibly due to dry conditions, but generally all strata were represented to some extent.

3.2.4 Section 4 (curved section of road)

A small number of larger Eucalypts occur on the southern side of the road as does a small drainage line, which was dry at the time of survey.

Photograph 3.4 **A view north of the first bend in survey section 4. Note the low point at the side of the road where a drainage line occurs (right hand side view).**

3.2.5 Section 5 (mostly cleared verge past curved section of road)

This section consists of Pastoral land with scattered young regrowth trees.

3.2.6 Section 6 (where existing poles will be used – within State Forest)

This area contains mature trees and a more intact understorey than the other sections.

3.3 Conservation Significance

3.3.1 Plant Communities

No plant community recorded in or adjacent to the proposed powerline corridor is listed as threatened under the TSC Act or EPBC Act.

Some sections of Talus-slope Woodland shared some features with the endangered ecological community: White Box-Yellow Box-Blakelys Red Gum Grassy Woodland. It was

difficult to show clearly on the basis of floristics that that the communities were not identical owing to the lack of ground cover species due to the drought. Despite this limitation, the presence of or proximity to species that are not associated with this community indicated that Yellow Box-White Box Grassy Woodland was not present. This community was concluded to be a variant of Talus-slope Woodland. A quadrat was surveyed in this community at approximately 3.8 km west of the proposed resort gate (survey section 2), on the southern side of the road (Table A.2 Appendix A). No similar community containing *Eucalyptus albens* was observed in the study area although a few individuals in pasture were recorded, also within survey section 2.

3.3.2 *Plant Species*

One specimen of *Persoonia marginata* (Clandulla Geebung) was recorded on the road margin, approximately 11.6 km west of the gate into the proposed resort property. *Persoonia marginata* is listed under Schedule 2 of the TSC Act as being "vulnerable". This specimen was located on the southern side, less than one metre from the road pavement.

No other species listed by Briggs & Leigh (1995) or Benson & Keith (1990) as being significant for conservation were observed in the study area.

3.3.3 *Fauna species*

A large number of threatened species of fauna occur in the locality, however, only a small subset have potential habitat within the impact zones, as described in Table 3.1.

Table 3.1 THREATENED FAUNA WITH HABITAT IN IMPACT ZONES

Scientific Name	Common Name	Status	Likelihood to occur on subject site	7 Part Test required
Mammals				
Dasyurus maculatus	Spotted-tailed Quoll	V, E*	May utilise the edge areas of forest on occasion for foraging as part of the use of large territories, but habitat features required as part of core habitat are absent from the forest to be impacted by the proposed works.	YES
Petrogale penicillata	Brush-tailed Rock-wallaby	E1	No suitable habitat in area of works. Potential habitat occurs in escarpments above the first tower location	NO

Table 3.1 THREATENED FAUNA WITH HABITAT IN IMPACT ZONES

Scientific Name	Common Name	Status	Likelihood to occur on subject site	7 Part Test required
Petaurus norfolcensis	Squirrel Glider	V	Possible nesting habitat in the sections within Bun Bullen State Forest, although hollow-bearing trees were not detected. Foraging habitat occurs throughout the valley in the form of flowering Eucalypts and favoured sap feeding trees such as stringybarks.	YES
Phascolarctos cinereus	Koala	V	Unlikely due to no records in the Valley or the locality. Ostensibly suitable habitat due to the presence of preferred feed trees, although not considered to present potential habitat in terms of SEPP 44	NO
Bats				
Saccolaimus flaviventris	Yellow-bellied Sheathtail Bat	V	Detected on subject site. Suitable foraging habitat on subject site	YES
Chalinolobus dwyeri	Large-eared Pied Bat	V, V*	Likely. Suitable foraging habitat throughout the valley. No roosting habitat in the study area.	YES
Falsistrellus tasmaniensis	Eastern False Pipistrelle	V	Likely. Suitable foraging habitat throughout the valley, although no large hollow Eucalypts suitable for roosting were recorded.	YES
Scoteanax rueppellii	Greater Broad-nosed Bat	V	Likely. Suitable foraging habitat throughout the valley and some small hollows or loose bark may be available for roosting.	YES
Mormopterus norfolkensis	Eastern Freetail Bat	V	Likely. Suitable foraging habitat throughout the valley and some small hollows or loose bark may be available for roosting.	YES
Miniopterus schreibersii oceanensis	Eastern Bent-wing Bat	V	Likely. Suitable foraging habitat throughout the valley. No roosting habitat in the study area	YES
Vespadelus troughtoni	Eastern Cave Bat	V	Likely. Suitable foraging habitat throughout the valley. No roosting habitat in the study area	YES
Birds				
Lophoictinia isura	Square-tailed Kite	V	Likely to forage in the area on occasion but not to nest.	YES

Table 3.1 THREATENED FAUNA WITH HABITAT IN IMPACT ZONES

Scientific Name	Common Name	Status	Likelihood to occur on subject site	7 Part Test required
Calyptorhynchus lathami	Glossy Black-Cockatoo	V	Likely to forage in the area on occasion although the small number of Casuarina's would not make up an extensive area of habitat.	YES
Climacteris picumnus	Brown Treecreeper	V	Likely to forage in the ecotone habitat between forest and pasture where there is an open grassy understorey	YES
Stagonopleura guttata	Diamond Firetail	V	Likely to forage in ecotone habitat as well as in open paddocks	YES
Pyrrholaemus sagittata	Speckled Warbler	V	Likely to forage in ecotone habitat as well as in open grassy woodland	YES
Grantiella picta	Painted Honeyeater	V	Possible - not recorded but may visit in the warmer months	NO
Melithreptus gularis gularis	Black-chinned Honeyeater (eastern subsp.)	V	Possible - may forage in the vegetation throughout the valley and key food species are present fringing the site. Limited nesting habitat.	YES
Pomatostomus temporalis temporalis	Grey-crowned Babbler (eastern subsp)	V	Possible - in grassy woodlands on the site	YES
Xanthomyza phrygia	Regent Honeyeater	E1, E*	Likely. Some preferred feed tree available; Whitebox and Yellowbox, but they are not abundant	YES
Melanodryas cucullata	Hooded Robin	V	Possible - but not recorded from site	NO
Lathamus discolor	Swift Parrot	E1, E*	Likely. Some preferred feed tree available; Whitebox and Yellowbox, but they are not abundant	YES
Neophema pulchella	Turquoise Parrot	V	Possible - not recorded from site	NO
Ninox connivens	Barking Owl	V	Potential foraging habitat but no nesting habitat available	YES
Tyto novaehollandiae	Masked Owl	V	Potential foraging habitat but no nesting habitat available	YES
Reptiles				
Hoplocephalus bungaroides	Broad-headed Snake	E1, E*	Likely at top of valley and lower escarpments. Impact zone not suitable	YES

Table 3.1 THREATENED FAUNA WITH HABITAT IN IMPACT ZONES

Scientific Name	Common Name	Status	Likelihood to occur on subject site	7 Part Test required
			habitat	
Varanus rosenbergi	Rosenberg's Goanna	V	Likely at top of valley and lower escarpments. Impact zone not suitable habitat	YES
Plants				
Persoonia marginata	Clandulla Geebung	V, V*	Recorded from the site	YES

V = vulnerable species TSC Act; V* = vulnerable species EPBC Act; E1 = endangered TSC Act; E* = endangered EPBC Act

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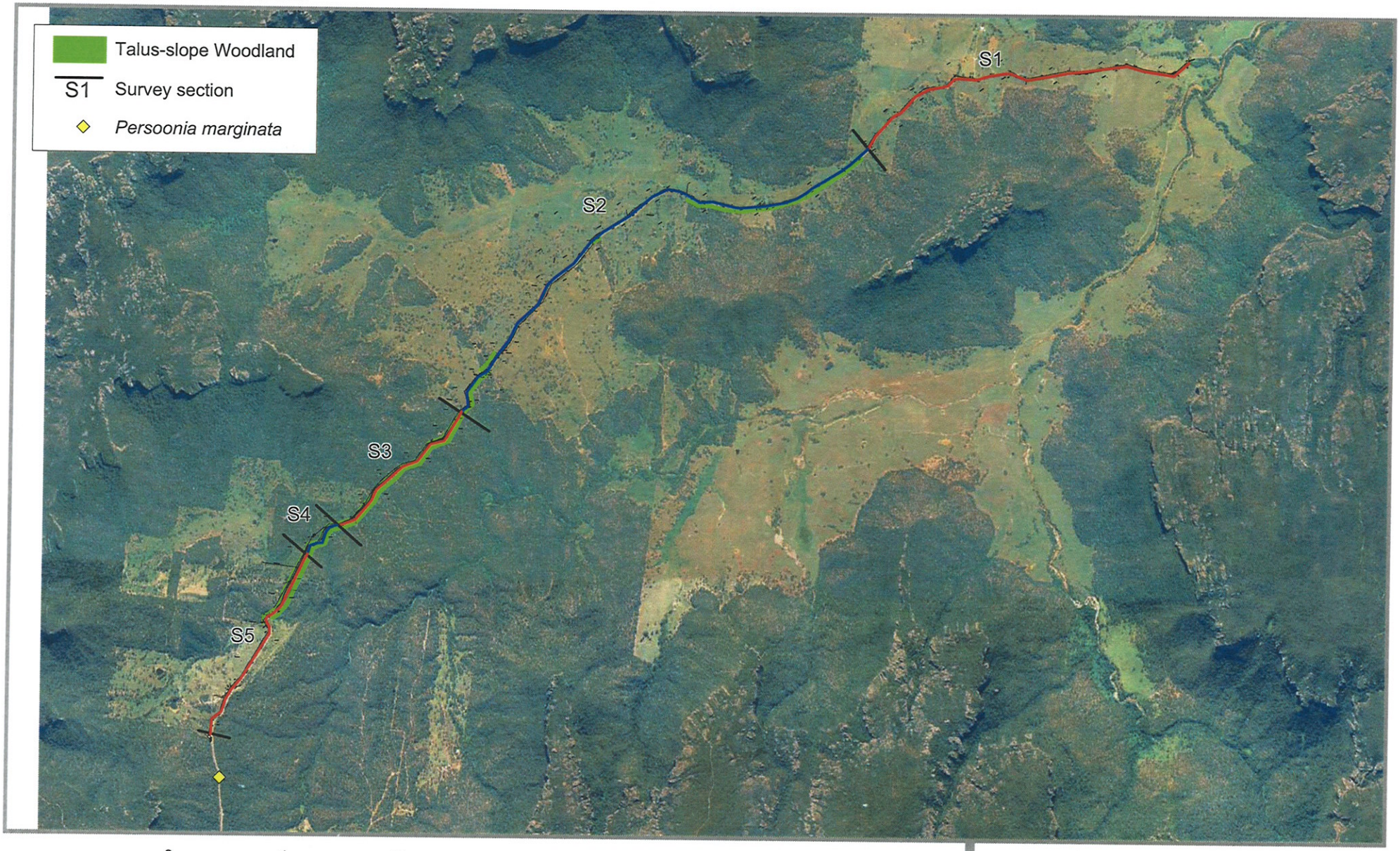

Figure 3.1 Vegetation along Powerline Corridor

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