

APPENDIX IA2

FLORA SURVEY (1997)

**DOCUMENTATION
PAGES 7 TO 12**

The second woodland community is dominated by *Eucalyptus mannifera* and *E. dives* trees and can be found where the topography is undulating to hilly.

The open forest community is characterised by the dominance of *Eucalyptus dalrympleana* species which is found growing in the valleys where the alluvium soils can be found.

The final woodland community is characterised by the presence of the tree species *Eucalyptus pauciflora* and *E. rubida*. These trees can be found in valleys which experience or are subject to frost hollows.

Benson and Keith describe the communities within this map unit as being characteristic of the poorer soils of the tablelands, derived from Permian shales, conglomerates and sandstones along the western edge of the great divide from Wallerawang to Ben Bullen.

The species groupings appear to be strongly related to topographic position.

The first woodland type, characterised by *Eucalyptus rossii* and *E. macrorhyncha*, is predominantly found on northern to western aspects. The amount of understory is dependant on season and rainfall conditions and consists largely of scattered grasses and occasional shrubs.

The most common grass species include the following; *Chionochloa pallida*; *Danthonia laevis*; *Poa sieberiana*, *P. labillardieri* and *Agrostis avenacea*. In specific areas *Lomandra multiflora*, *Dianella laevis*, *Stylidium graminifolium* and *Gonocarpus tetragynus* can be found. The shrub species that may be found are characteristically *Acacia buxifolia*, *Brachyloma daphnoides*, *Lissanthe strigosa* and *Hibbertia obtusifolia*.

Where this community reaches its upper limits in altitude it often merges with the scribbly gum - stringybark woodlands which characterise the sandstone ridges adjacent to the hillslopes of the area.

The second woodland type with *Eucalyptus mannifera* and *E. dives* is found on the country of lower relief and has an understory of similar species to the first woodland type although it is often more dense in cover.

The third community discussed, the open forest, is found on the low slopes and valley floors where the soil is deeper and often richer as it is of a more alluvial or colluvial nature and there is more shelter provided by the surrounding hillslopes. Although this community is characterised by the species *Eucalyptus dalrympleana* the species *E. bridgesiana* or *E. viminalis* are often found associated with this community the *E. viminalis* particularly in the valleys along creeks. The understory of this community often contains many tall shrubs and small trees with the most common species being *Acacia dealbata*, *A. obliquinerva* and *Leptospermum flavescens*. The other common member of the understory within this group is *eucalyptus* regeneration or saplings which is an indication of the better quality soils that this plant community is associated with. The ground cover within

this community may be either dominated by *Pteridium esculentum* as a result of frequent burning or it may be composed of *Dichondra ripens*, *Gonocarpus tetragynus*, *Acena nova-zelandiae*, *viola betonicifolia* or *Glycine clandestina*. The concentration of these ground covers is 60-80% depending on seasonal conditions.

The fourth community, woodland dominated by *Eucalyptus pauciflora* and *E. rubida* was once common from Blackmans flat to Wallerawang but has now largely been cleared and was not found to be evident within the proposed open cut area.

Literature searches of the National Parks and Wildlife Services data base, the Atlas of NSW Wildlife, for the Wallerawang and Bathurst 1:100 000 topographic map sheets revealed that there are thirty eight species of threatened plants listed on the database as having been sighted on the Wallerawang map sheet and four species are listed on the Bathurst map sheet. These species are as listed below (Listed by genus and species only).

The Wallerawang Map Sheet.

Alania endlicheri
Platysace olelandii
Helipterum albicans var *graminifolium*
Olearia quercifolia
Apatophyllum constablei
Epacris muelleri
Rupicola decumbens
Pseudanthus divaricatissimus
Dillwynia stipulifera
Almaleea incurvata
Pultanaea glabra
Acacia bynoeana
Haloragodendron lucassii
Prostanthera cryptandroides
Prostanthera stricta
Atkinsonia ligustrina
Acacia asparagoides
Acacia subtilinervis
Darwinia peduncularis
Eucalyptus cannonii
Adenochilus nortonii
Chiloglottis formicifera
Dendrobium linguiforme
Dendrobium speciosum
Diuris sulphurea
Eriochilus cucullatus
Liparis reflexa
Plectorrhiza tridentata
Pterostylis longicurva
Sarcochilus hillii
Notochloe microdon
Hakea constablei
Persoonia acerosa
Persoonia marginata
Boronia deanei
Phebalium sympetalum
Dodonaea megazyga
Cyphanthera scabrella

The Bathurst Map Sheet.

Pultanaea aristata
Eucalyptus cannonnii
Eucalyptus pulverulenta
Persoonia marginata

After checking the information received and applying for a check on the locations of each of the species listed (accurate to within one kilometre) it was revealed that the site does not contain any plant species that are registered or listed as being threatened, vulnerable, endangered or extinct as defined by the lists contained within schedule 1 or schedule 2 of the Threatened Species Conservation Act 1995 no. 101, or as they appear on the Atlas of NSW Wildlife database as maintained by the National Parks and Wildlife Service.

Section 4.3 Comparison of Field Observations to Literature Search.

Upon comparing the results of the field investigations it can be seen that the majority of the bushland surveyed, and obviously the cleared area, complies closely with the communities or vegetation map units as used by Benson and Keith.

The map unit used in this survey called the open forest is very similar in character to the third community discussed by Benson and Keith (See the highlighted section on page 7). the other mapping unit that has been used is similar to the first community as discussed which is the woodland of Eucalyptus rossii and E. macrorhyncha. The species list attached as an appendix to this report lists the species that have been identified as existing within the map units as listed by Benson and Keith. The species that were located and identified during the course of this survey are marked and those that were not covered by the list have been added and marked.

Section 5.0 Rare or Threatened Species.

As mentioned above the search of the National Parks and Wildlife Services records revealed that there were plants that are listed as rare, threatened, endangered or extinct under schedules 1 and 2 of the Threatened Species Conservation Act identified within the region as identified by the Bathurst and Wallerawang Map sheets. Although the search also revealed that none of the species listed have been located within the study area.

As no plant species as listed in the Threatened Species Conservation Act 1995 No 101, were found to exist within the study area and the wildlife database shows no record of any of the species as being identified within the study area there is no need to carry out any "eight point tests for significant effect".

This is required by the Threatened Species Conservation Act 1995 No. 101 which contains an amendment to the Environmental Planning and Assessment Act which requires an eight point test to be carried out should one of the species listed be found to exist.

However, based on the likelihood of occurrence one eight point test was carried out for the species *Eucalyptus cannonii* which is attached as appendix B to this report.

**Section 6.0 Possible Impacts of the Proposal on the
Flora of the Site.**

The proposed open cut will require the removal of vegetation in the areas currently defined or contained within the Ben Bullen State Forest, an approximate area of 12 hectares, along with some clearing associated with the construction of the haul road at its southern end, this should mean an additional area of no more than 1 hectare, therefore the total timbered area to be cleared would be approximately 13 hectares.

As this is an open cut operation the total area of disturbance would equal the total area concerned, a total of 28 hectares, so the disturbance to the pasture land would be approximately 15 hectares.

The cleared land can be considered as having been previously disturbed and the rehabilitation plan will allow for the restoration of the land to grazing quality so the overall disturbance or impact on this vegetation type is minimal.

The woodland vegetation unit to the east of the study area should only be subject to the minimum of disturbance because it is situated far enough to the east of the proposed open cut that it should be beyond the limits of the working area. Some interference may be caused by the construction of erosion and sediment control measures such as contour drains to divert clean water around working areas or the construction of fencing. Therefore the impact of the proposal on this vegetation unit will be minimal.

The open forest in the gullies to the north and east of the proposed open cut are well represented both further north and further east of the proposed area and neither contain species of plants that are considered threatened, vulnerable, or endangered and therefore the impact of the proposal on these vegetation communities could also be considered minimal.

The open forest in question (vegetation type 1) does however have conservation significance in that these areas are considered "potential Koala Habitat" as defined by State Environmental Planning Policy - 44, Koala Habitat Protection, which means that it warrants consideration in finalising aspects of this proposal, in particular the final landform that is considered and the species to be used in rehabilitating the site.

It is strongly suggested that the species of plants to be used in the rehabilitation process be consistent with what is currently found on the site and that particular emphasis be placed on re-establishing areas with suitably large stands of *Eucalyptus viminalis* that would replace the quantity of open forest that has been disturbed.

As I understand it the rehabilitation plan proposes to use tree tops and limbs, gathered during the clearing stages, along with

the careful stripping of the topsoil for use in the rehabilitation process, as a seed pool for seeds to be used in rehabilitating the site.

The topsoil to be spread with a minimum of disturbance and the tree tops and limbs to be strategically placed in order to gain maximum effect.

The species *Eucalyptus viminalis*, the feed tree species as per schedule 2 of S.E.P.P - 44, is adequately conserved within the Ben Bullen State Forest further to the north and east of the subject area.

The area concerned does not constitute core koala habitat as defined in the S.E.P.P (ie. the area does not support a resident population evidenced by the presence of breeding females) a finding which the fauna survey and data search of the National Parks and Wildlife Service Wilddata database confirms.

It is my opinion that the impact of the proposal on the vegetation, in a regional context, and related to the area as Koala habitat, while significant should not be considered sufficient to prevent this proposal from proceeding.

The vegetation unit labelled Regeneration will be disturbed by the operation of the open cut, however the rehabilitation of these areas upon completion of the project and the benefits this will bring will exceed the impact that the proposal will have on this vegetation unit.

Section 7.0 Conclusions and Recommendations.

Provided the rehabilitation plan for the proposed open cut includes works as suggested below to rehabilitate the site to a state that allows for the maintenance of the diversity of the flora in the study area I can see no reason why the proposal should not proceed.

Particular attention should be paid to providing sufficient quantities of the tree species *Eucalyptus viminalis*, the Koala feed tree species, in the rehabilitated landform, so that the possible koala habitat is restored to the area upon completion of the project.

The rehabilitation plan should try and re-establish the plant community that pre-existed on the site, i.e. use species of plants to include understory and groundcover species wherever possible to maintain the balance within the plant community.

Careful attention should be paid to the rehabilitated areas in the early stages of rehabilitation to ensure that weeds and introduced plants such as Blackberry and Pattersons Curse do not "take over" the sites which are particularly susceptible to infestations of this nature in their early stages of development.

As I understand the rehabilitation plan is progressive so moves to ensure these works are carried properly from the initial stages is vital to the successful rehabilitation of the site.

If guidelines such as these are developed and adopted I can see no reason why this development should not proceed.

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