

Shire of
Gunnedah
 Land of Opportunity

MEETING NOTICE

COMMITTEE **PLANNING ENVIRONMENT AND DEVELOPMENT COMMITTEE**

DIRECTORATE **Planning and Environmental Services**

DATE **Wednesday 2 September 2015**

TIME **4:00pm**

VENUE **Council Chambers, 63 Elgin Street, Gunnedah**

ATTACHMENTS **Acting Director Planning and Environmental Services Report**

AGENDA

Present

Apologies

Declarations of Interest

Report of Acting Director of Planning and Environmental Services

1. Koala Plan of Management – Development Application 2015/062 – Lots 33, 334, 336, 337, 338 and 339 DP755503, Lot 1 DP111136 and Lots 1 and 2 DP120946 131 Quia Road, Gunnedah 3

Objectives

Donna Ausling
 ACTING DIRECTOR PLANNING AND ENVIRONMENTAL SERVICES

Apologies to: 02 6740 2120

** See Over*

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The ordinary, extraordinary open and Committee meetings of Council will be audio recorded for minute-taking purposes, please note meetings held in the Council Chambers are recorded on tape for the purposes of verifying the accuracy of minutes and the tapes are not disclosed to any third party under section 12(6) of the Local Government Act, except as allowed under section 18(1) or section 19(1) of the PPIP Act, or where Council is compelled to do so by court order, warrant or subpoena or by any other legislation.

*** Local Government Act 1993 – Definition of Closed Meeting Items**

10A Which parts of a meeting can be closed to the public?

- (1) A council, or a committee of the council of which all the members are councillors, may close to the public so much of its meeting as comprises:
- (a) the discussion of any of the matters listed in subclause (2), or
 - (b) the receipt or discussion of any of the information so listed.
- (2) The matters and information are the following:
- (a) personnel matters concerning particular individuals (other than councillors),
 - (b) the personal hardship of any resident or ratepayer,
 - (c) information that would, if disclosed, confer a commercial advantage on a person with whom the council is conducting (or proposes to conduct) business,
 - (d) commercial information of a confidential nature that would, if disclosed:
 - (i) prejudice the commercial position of the person who supplied it, or
 - (ii) confer a commercial advantage on a competitor of the council, or
 - (iii) reveal a trade secret,
 - (e) information that would, if disclosed, prejudice the maintenance of law,
 - (f) matters affecting the security of the council, councillors, council staff or council property,
 - (g) advice concerning litigation, or advice that would otherwise be privileged from production in legal proceedings on the ground of legal professional privilege,
 - (h) information concerning the nature and location of a place or an item of Aboriginal significance on community land.

VISION

**TO BE A FOCUSED COMMUNITY VALUING GUNNEDAH'S IDENTITY
AND QUALITY LIFESTYLE.**

MISSION

**TO PROMOTE, ENHANCE AND SUSTAIN THE QUALITY OF LIFE IN GUNNEDAH SHIRE
THROUGH BALANCED ECONOMIC, ENVIRONMENTAL
AND SOCIAL MANAGEMENT IN PARTNERSHIP WITH THE PEOPLE.**

ORGANISATIONAL VALUES

In partnership with the community:

- 1. EQUITY**
- 2. INTEGRITY**
- 3. LEADERSHIP**
- 4. OPENNESS & ACCOUNTABILITY**
- 5. CUSTOMER SATISFACTION**
- 6. COMMITMENT TO SAFETY**
- 7. EFFICIENT & EFFECTIVE USE OF RESOURCES**

Acting Director Planning and Environmental Services' Report

ITEM 1	Koala Plan of Management – Development Application 2015/062 – Lots 33, 334, 336, 337, 338 and 339 DP755503 Lot 1 DP111136 and Lots 1 and 2 DP120946 – 131 Quia Road, Gunnedah
MEETING	Planning Environment and Development Committee – 2 September 2015
DIRECTORATE	Planning and Environmental Services
AUTHOR	Town Planner
POLICY	Nil
LEGAL	Environmental Planning & Assessment Act, 1979 Gunnedah Local Environmental Plan, 2012 State Environmental Planning Policy No. 44 – Koala Habitat Protection
FINANCIAL	Nil
STRATEGIC LINK	Community Strategic Plan 4.1.3 Ensure that green spaces support and encourage our valuable Koala population to traverse the area and encourage animal health and breeding. 4.3.3 Provide the Shire with strategies to protect and nurture the Koala population. Operational Plan 4.1.3.1 Consideration of inclusion of suitable koala habitat during assessment of major developments. 4.3.3.1 Creation and implementation of strategies to sustain the koala population across the Shire.
ATTACHMENTS	Koala Plan of Management – 131 Quia Road

OFFICER'S RECOMMENDATIONS:

That Council endorse the Koala Plan of Management, prepared by David C Paull, dated August 2015, submitted with Development Application No. 2015/062 – for the Subdivision of 9 lots into 24 lots, Construction of Electrical Generation Works (Solar Energy System) and Community title subdivision of electrical generation works into 272 lots, at Lots 333, 334, 336, 337, 338 and 339 DP755503, Lot 1 DP111136 and Lots 1 and 2 DP120946, 131 Quia Road, Gunnedah, subject to the following amendments:

- a. The removal from the report of references to Council undertaking ongoing monitoring and management of the site upon implementation of Council's Draft Comprehensive Koala Plan of Management; and
- b. Inclusion within the report that any and all ongoing monitoring and rehabilitation efforts are to be undertaken by the developer.

PURPOSE

This report is seeking endorsement of the Koala Plan of Management that has been submitted as part of Development Application No. 2015/062, as the development site has been identified as core Koala Habitat.

Applicant:	Ironbark Energy C/- Geolyse
Owner:	North West Projects (NSW) Pty Ltd
Property Description:	Lots 333, 334, 336, 337, 338 and 339 DP755503 Lot 1 DP111136 and Lots 1 and 2 DP120946 131 Quia Road, Gunnedah

BACKGROUND

Council received Development Application No. 2015/062 for the subdivision of 9 lots into 24 lots, Construction of Electrical Generation Works (Solar Energy System) and community title subdivision of electrical generation works into 272 lots on 6 July 2015. As part of the proposed development, an amended Koala Plan of Management was submitted on 18 August 2015.

Under the provisions of State Environmental Planning Policy No. 44 – Koala Habitat Protection, before Council is able to determine a development application, a Koala Plan of Management is to be prepared and approved by Council and the Director of Planning.

COMMENTARY

Assessment

The development application identified that the site was regarded as 'core' Koala Habitat as per the definition within the State Environmental Planning Policy No. 44 – Koala Habitat Protection. Hence a Koala Plan of Management (KPoM) was prepared and submitted to Council.

“core koala habitat means an area of land with a resident population of koalas, evidenced by attributes such as breeding females (that is, females with young) and recent sightings of and historical records of a population.” – SEPP 44, Koala Habitat Protection”

Proposed Development

The Koala Plan of Management has been prepared for outlining of suitable management practices that will ensure preservation and enhancement of Koala habitat and protection of Koala populations within the surrounding areas of the site as well as within the development boundaries.

Assessment of Proposed Koala Plan of Management

During the survey of the development site one Koala was observed within the development boundaries. It is anticipated that due to the adjoining development containing high numbers of Koala feed trees and denser vegetation, Koala populations may be present within these adjoining vegetated areas. The site investigation noted the presence of Koala scats under identified Koala feed trees, depicting a high use of the area by Koala populations. With the observed levels of faeces and estimates of 0.3 individuals per hectare, it is estimated that population of approximately 4-12 Koalas may be located within the surrounds of the development site.

The development site contains three vegetation communities, being Ironbark-cypress woodland, Cypress-White Box-Hilltop Red Gum Woodland and Exotic Grasslands. The plan identifies a large concentration of Koala Feed Trees within the south eastern region of the site as depicted in Figure 4 overleaf, as extracted from the report. The vegetated area has identified 20% of species population being Eucalyptus Albens (White Box), which is an identified Koala Feed Tree Species as listed within SEPP 44.

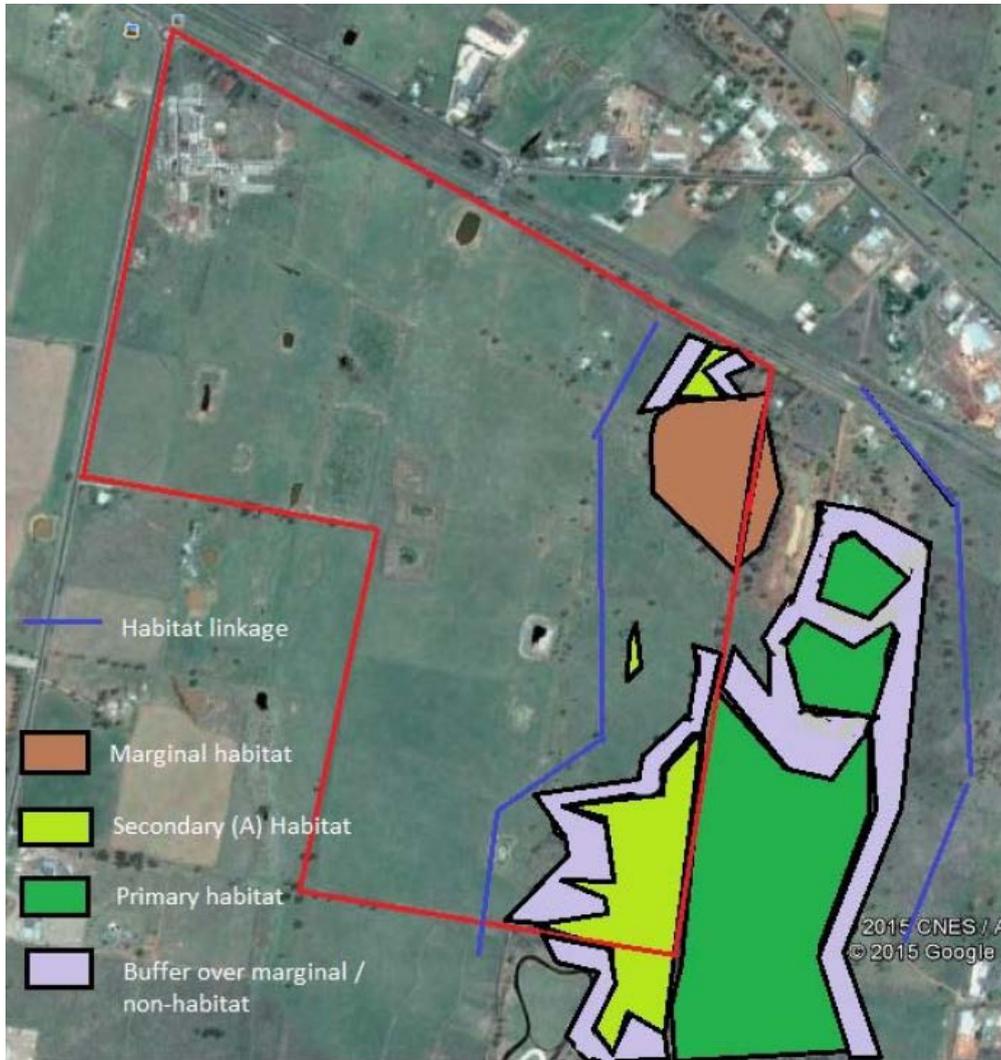


Figure 4. Koala Habitat Mapping of the site and adjacent lands

The adjoining allotment contains primary Koala habitat with a concentration of primary Koala feed trees comprising of at least 50% of the over storey. The adjoining primary habitat does not spread into the development site. However, due to the close proximity of this primary habitat area and the lack of any substantial barrier in between the sites, it is concluded that the site is being regularly used by resident Koala populations. The existing boundary fence is constructed using wooden fence posts and has holes in some places allowing passage of Koalas from the adjoining habitat onto the development site. The Koala Plan of Management recommends that the existing fence be maintained and repaired with retention of wooden posts being essential.

The Koala Plan of Management identifies that the threat to Koala populations within and adjacent to the site arises from grazing of the site, attack from dogs, tree removal, loss of habitat connectivity, disease and rubbish. The plan identifies that there is no signs of dog activity on the site and due to the land zoning and adjoining land use for industrial usage it is not likely that dog activity on the site will occur. A previous study of the site in 2013 by Biolearning Greenstudies identified that the resident population within the vicinity of the site is disease free. All other factors are included within the plan as being recommendations for enhancement of the site.

Any tree removal is to be undertaken with care to ensure that there are no individuals inhabiting the tree prior to removal. In the event that there is a koala present within the tree removal of this tree is to be postponed until the koala moves form the tree on its own accord.

The Koala Plan of Management has identified that there is to be tree replanting undertaken in the areas marked Zone A, B & C. Within these areas feed tree species planting, targeted weed removal within the revegetation areas and removal of the existing rubbish onsite is recommended to increase and enhance the existing habitat areas of the site. Rehabilitation efforts aim to produce around 30 mature trees per hectare of the site. Estimations of mortality rates assume that at least 25% of species planted will survive to maturity. To achieve the desired result a density of 200 established young trees per hectare would achieve the desired rejuvenation, which will require the planting of approximately 1,340 young trees across the three zones.

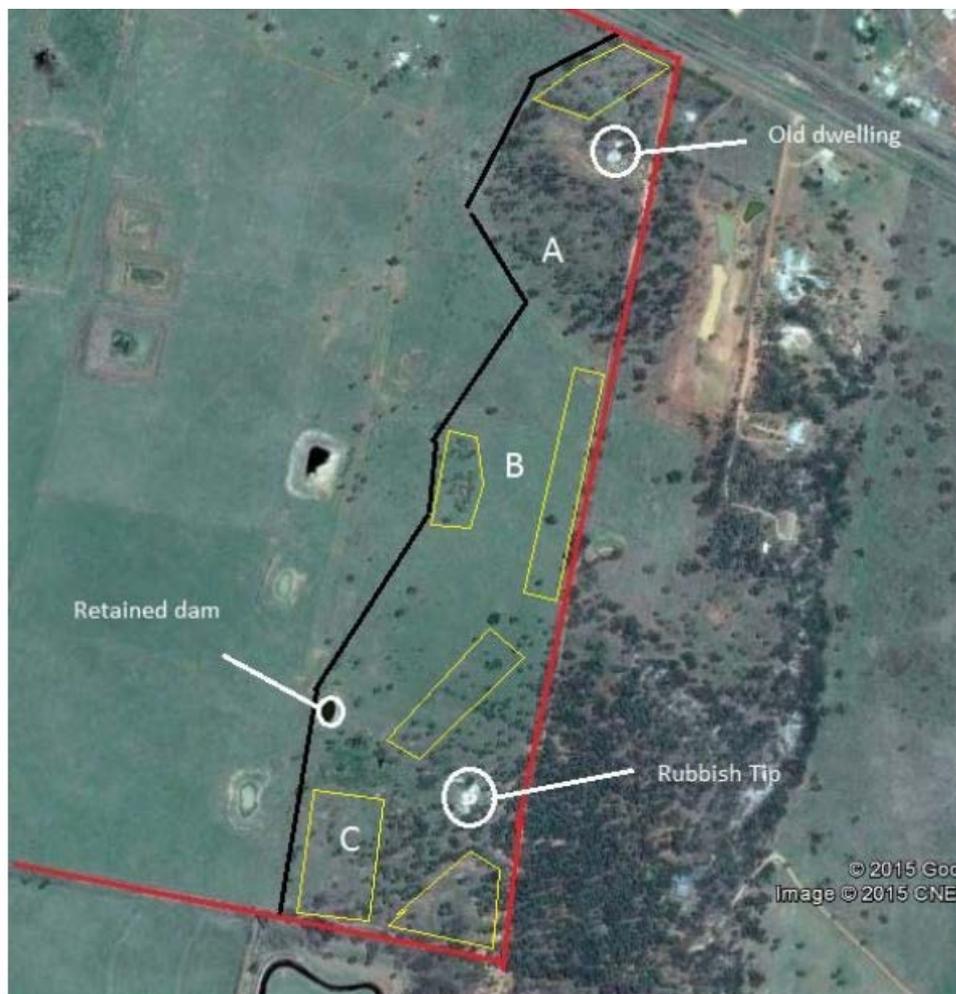


Figure 5. Koala Management Area (recommended revegetation zones marked as yellow polygons)

To ensure suitable establishment of restoration areas, no firewood or timber cutting is to be undertaken with all fallen timber to be retained. No deliberate burning is to occur within the site for growth purposes during the first 20 years of rehabilitation to ensure that infant trees are protected. Grazing on the site is to be restricted to promote natural regeneration of native species within the understorey.

The Koala Plan of Management submitted with the application identifies monitoring and a criteria for assessment against to ensure suitable reestablishment of Koala Habitat and supporting of existing or future Koala populations. Monitoring and rehabilitation efforts are to be undertaken by the developer. Successful reestablishment of habitat and success of the Koala Plan of Management is to be accessed by evidence of or Koala populations not dropping below 30%, evidence of breeding females onsite and an increase in number of identified Koala Feed Tree Species.

Conclusion

The submitted development site Koala Plan of Management is considered to be consistent with the legislation requirements as set under State Environmental Planning Policy No. 44 – Koala Habitat Protection. The proposed management strategies and performance criteria are satisfactory, with regard to the impacts of the proposed development. The current report indicates that ongoing monitoring and management of the identified Koala habitat is to be undertaken by Council in conjunction with Council's Comprehensive Koala Plan of Management. With the Council now preparing a Koala Strategy, all monitoring is to be undertaken by the developer. It is recommended that this reference be removed from the Koala Plan of Management and amended to reflect all required maintenance and monitoring is to be undertaken by the developer. The submitted Koala Plan of Management is recommended for endorsement by Council, with the proposed variations.

Other Comments

The Koala Plan of Management has been referred to the Department of Planning and Environment for approval by the Director.

Donna Ausling

ACTING DIRECTOR PLANNING AND ENVIRONMENTAL SERVICES

PLANNING ENVIRONMENT AND DEVELOPMENT OBJECTIVES 2015/16

OBJECTIVE NO	MANAGEMENT PLAN REF. PAGE	OBJECTIVE	HOW WILL THIS BE ACHIEVED	TARGET DATE	STATUS	REVISED DATE
1.		Waste Management Strategy	Implementation of Waste Management and Environmental Initiative	June 2019		
2.		Namoi Parklands Riverine Program	Biannual Review	August 2016	Stage 1 Complete Stage 2 Complete Stage 3 Work Commenced Stage 4 Work Commenced	
3.		Gunnedah Strategic Planning Review		September 2016	Draft Urban Landuse Strategy presented to Planning Environment & Development Committee May 2015 for endorsement for exhibition. Referred to June 2015 Council meeting. Draft Gunnedah Urban Landuse Strategy on exhibition- closes 28 August 2015	
4.	Koala Habitat Improvement	Adoption and implementation of Koala Management Strategy	Consideration at August 2015 Planning Environment & Development Meeting for exhibition	September 2016		
5.	Enforcement Policy	Development and adoption of Enforcement Policy	June 2016	June 2016		
6.	Floodplain Management	Completion of Blackjack Creek Flood Mitigation Project	Property Acquisition Commenced	June 2017 Negotiations Ongoing. Compulsory Acquisition Commenced		

**Koala Plan of Management
For Lots 333 – 334, 336 – 339 DP 755503 & Lots 1 – 2 DP
120946, Cnr Quia & Black Jack Roads, Gunnedah**



*Pursuant to the State
Environmental Planning Policy
No 44--Koala Habitat Protection
(SEPP 44)*

David C. Paull (MResSc)
August 2015

Koala Plan of Management

**For Lots 333 – 334, 336 – 339 DP 755503 & Lots 1 – 2 DP 120946, Cnr Quia & Black Jack Roads,
Gunnedah**

Report prepared for Geolyse on behalf of Ironbark Energy Pty Ltd

By David C. Paull (BSc, MResSc, Dip. Hum.)

17 August 2015



Koala Plan of Management

For Lots 333 – 334, 336 – 339 DP 755503 & Lots 1 – 2 DP 120946, Cnr Quia & Black Jack Roads, Gunnedah

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1. Background

This Koala Plan of Management has been prepared by in accordance with the provisions contained under the *State Environmental Planning Policy No 44--Koala Habitat Protection* (SEPP 44) and pertains to land contained within the area of Lots 333 – 334, 336 – 339 DP 755503 & Lots 1 – 2 DP 120946, Cnr Quia & Black Jack Roads, Gunnedah.

Previous ecological investigations of the site (Ecobiological 2007) identified Potential Koala Habitat (as defined under SEPP 44) as being present on the land as well as current Koala usage. Under Part 2 of SEPP 44 development control of Koala habitat is required if:

- (a) that is land to which this Policy applies, and
- (b) that is land in relation to which a development application has been made, and
- (c) that:
 - (i) has an area of more than 1 hectare, or
 - (ii) has, together with any adjoining land in the same ownership, an area of more than 1 hectare, *whether or not the development application applies to the whole, or only part, of the land.*

As the site contains “Potential Koala habitat’ (as defined under SEPP 44), is land in which a development application is being (or intended) to be made, and is land of more than 1 hectare, SEPP 44 must be adhered to where a development is being made to a local government determining authority.

This Plan contains clarification on whether the site meets the requirements of being “Core Koala Habitat” (as defined under Part 2(8) of the SEPP 44), an assessment of current Koala usage of the site and recommended actions that meet the requirements of Part 3 – Plans of Management under SEPP 44.

This Plan has been prepared with reference to the guidelines for the production of a local (individual) Koala Plan of Management (Dept of Planning Circular No. B35, s. 2.2.2). The key matters of s. 2.2.2 are listed below with reference to where they have been addressed in this document.

Table 1. Matters to be addressed (pursuant to Planning Circular No. B35)

Matter	Section	Page
An estimate of population size	3.4	13
Identification of preferred feed tree species for the locality and extent of resource available	3.2, 3.3	9-12
An assessment of the regional distribution of Koalas and the extent of alternative habitat available to compensate for that to be affected by the actions	3.3	12
Identification of linkages of core habitat together adjacent areas of habitat and movement of Koalas between areas of habitat. Provision of strategies to manage and enhance these corridors	3.5	13-14
Identification of major threatening processes which impact on the population. Provision of methods for reducing these impacts	3.6	14
Provision of detailed proposals for ameliorating these impacts on Koala populations from any anticipated development in areas of core habitat	4	15-20
Identification of any opportunities to increase the size or improve condition of existing Koala habitat, including lands adjacent to areas of identified core habitat	4.2	16-18

The plan should state clearly what it aims to achieve	4.1	15
The plan should state what criteria against which achievement of these objectives is to be measured	4.7	21
The plan should also have provisions for continuing monitoring, review and reporting. This should include an identification of who will undertake further work and how it should be funded	4.7	21

2. Location and Vegetation Communities

The site lies to the south-east of the intersecting roads Quia Road and Black Jack Road, Gunnedah Shire, covering an area of approximately 132 ha and is comprised of small rural landholdings and an industrial area with a derelict abattoir. Most of the land is cleared of native vegetation except for some remnant woodland which straddles the eastern boundary. The vegetation in this sector is contiguous with a larger patch of remnant woodland vegetation which is distributed to the east and the south of the site. The site lies approximately 1.1 km to the south of the Namoi River and associated native vegetation, and approximately 3 km to the west of Gunnedah township. It experiences ongoing grazing activity.



Figure 1. Locality of the site shown with a red boundary. Namoi River cuts the top right corner.

There are three vegetation communities present on the site, two of which are dominated by native species;

- (a) Ironbark-cypress woodland
- (b) Cypress-White Box-Hilltop Red Gum woodland
- (c) Exotic grassland

2.1 Ironbark-cypress woodland

The north-east ridge area of the site occur on Jurassic outcropping volcanics including a rocky scree, giving the area a bare understorey deprived of shrubs with low numbers of native groundstorey species. The overstorey is dominated by a Callitris/Ironbark woodland (*Callitris glaucophylla* (50%) and *Eucalyptus crebra* (40%) along with *Eucalyptus melanophloia*, *Eucalyptus melliodora* and *Eucalyptus dealbata*. Exotic pasture and crop weeds occur though tend to favour the better soils of the lower slopes of the site.



Photo 1. White Cypress Pine – Ironbark woodland

2.2 Grassy White Cypress-White Box-Hilltop Red Gum woodland

The woodland in the south-east corner occurs on a metamorphosed sedimentary substrate with a loamy sand topsoil. This woodland on the site is continuous with a larger stand of woodland extending east and south and to some extent to the north in scattered patches. The dominant species throughout this woodland *Callitris glaucophylla* (60%), *Eucalyptus albens* (20%) and *Eucalyptus dealbata* (20%), along with some *Geijera parviflora* and scattered *E. melliodora* and *E. blakelyi*. A sparse shrub layer is present, dominated by *Cassinia quinquefaria* and *Acacia deanii*. The ground cover was dominated by native grasses and forbs with a moderate diversity though a significant number of weeds are present. The areas of woodland adjacent to the site are in a better condition, in terms of number eucalypts retained in the canopy and levels of past grazing pressure.

The species composition of this grassy woodland are consistent with the Threatened Ecological Community *White Box - Yellow Box - Blakely's Red Gum Woodland* as listed on Part 3 of Schedule 1 of the *Threatened Species Conservation Act 1995* (TSC Act) (Ecobiological 2007) and may be consistent with the Commonwealth Critically Endangered Ecological Community *White Box, Yellow Box and Blakeley's Red Gum Woodland and Derived Native Grassland* as listed under the *Environmental Protection and Biodiversity Conservation Act 1997* (EPBC Act).



Photo 2. Grassy White Cypress – White Box – Hilltop Red Gum Woodland

2.3 Exotic grassland

The majority of the vegetation in the site is cleared with isolated paddock trees, and is dominated by exotic weeds and grasses, though contains scattered native species (Photo 3). The more upslope sections of cleared land, on the eastern side of the site contain most of the scattered trees and a higher proportion of native species. Some dieback of cypress trees was noted towards the centre of the site.



Photo 3. Cleared land with scattered trees.



Figure 2. Native vegetation communities within and adjacent to the site (Key: brown: Ironbark-Cypress woodland; Green: Cypress-White Box-Hilltop Red Gum woodland)

A map showing the distribution of the two woodland communities within the site and on adjacent land is shown in Figure 2. The overall condition of the woodland vegetation in the site is moderate, with a reduced eucalypt canopy and a disturbed understorey mainly from grazing and the presence of human rubbish, mainly centred on a private tip in the southern end of the site within the area of grassy woodland. Levels of young tree recruitment has been reduced by grazing.

3. Historical and current presence of Koalas on the site

3.1 Is core koala habitat present?

Ecobiological (2007) conducted SAT assessments at the site and concluded that while the site was ‘potential habitat’, it was not ‘core habitat’ because:

- (a) the overall level activity level was less than 30%
- (b) the tree species at the site are regarded as ‘secondary’ under the NSW Koala Recovery Plan (2008)

However under Part 1(4) of SEPP 44 the following definition of core habitat is provided:

"core koala habitat" means an area of land with a resident population of koalas, evidenced by attributes such as breeding females (that is, females with young) and recent sightings of and historical records of a population.

In order to undertake this assessment, note must be taken of levels of past usage and any evidence of breeding.

3.2 Assessment of the activity levels within the site

Ecobiological’s (2007) ecological assessment of the site devoted attention to the presence of Koalas. The SAT technique (Phillips and Callaghan 2005) was utilised and seven SAT sites 140 trees were searched for Koala scats. Scats were found at five of the sites where activity levels ranged from 20-5% (average 12%). Despite most of the observed scats described as being old, one individual was observed on site at the time.

A review of where the SAT sites were located shows that most were located in areas where there were few if any known food trees species present.

For this plan, searches for Koala scats were conducted at the site on the 11th June 2015. Focus was given to the area of Grassy Cypress Pine - White Box – Hilltop Red Gum woodland in the south-east corner of the site. A total of 40 eucalypt trees were searched (which is most of the eucalypts in this woodland community present on the site). The results are presented below (Table 2).

Table 2. Activity levels per tree species at Site (11th June 2015).

Tree species	Trees searched	No. with scats	%
Eucalyptus albens	22	9	40.9
Eucalyptus dealbata	17	6	35.3
Eucalyptus blakelyi	1	0	0
Total	40	15	37.5

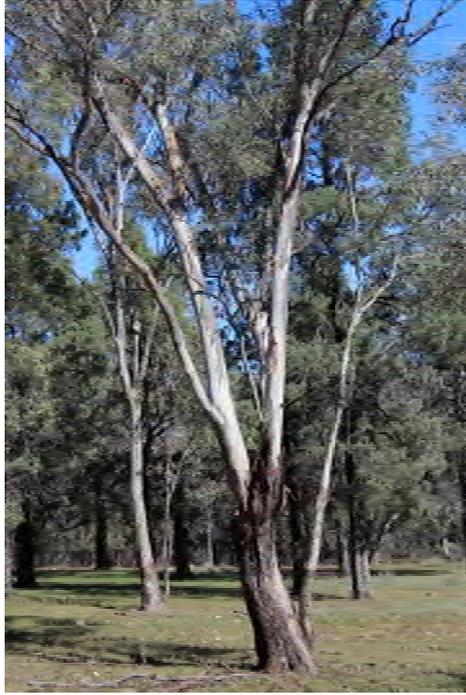


Photo 4. White Box (*E. albens*)



Photo 5. Hilltop Red Gum (*E. dealbata*)

Scats were detected under White Box and Hilltop Red Gum trees in equal proportion. While White Box is recognised as a feed tree species under Schedule 2 of the SEPP 44, *E. dealbata* is not listed. However, based on their data, the Australian Koala Foundation regards *E. dealbata* as a ‘primary species’ in the Gunnedah LGA (David Mitchell pers. comm.). There is also recognition in the Draft Gunnedah CKPoM that *E. dealbata* is a favoured feed tree. Based on the data from the site, *E. dealbata* and *E. albens* are equally selected and both should be regarded as Preferred Koala Feed Trees (PKFT) for the purposes of this Plan.

Most of the scats observed on the site were old (estimated >1 month old), while some (~20% were a few weeks old and three trees had fresh scats. There were a number of piles containing scats of very young animals judging by their small size (Photo 6). One female animal was observed near the eastern boundary fence (Photo 7).



Photo 6. Scats from young Koala



Photo 7. Koala on site

Given:

- (a) Historic and recent observations in the site and surrounding areas show this patch is regularly used by Koalas,
- (b) Recent levels of site usage indicate a 'high-use' area,
- (c) Records of scats from young animals indicate that the site is used by breeding animals and their young;

The site is likely to part of an area of habitat used by a resident population of Koalas and is therefore consistent with the definition of 'core habitat' under the definitions in the SEPP 44, therefore the proponent is required to prepare a Koala Habitat Management Plan and provide to the local government determining authority.

3.3 Extent of Koala Habitat

The extent of Koala habitat for any individual Koala Plan of Management must be considered at both local and regional scales. To assist the on-ground management of Koala populations, it is customary to depict the vegetation of any area subject to a Koala Plan of Management according to the habitat mapping scheme as developed by the Australian Koala Foundation (AKF) and widely used across the state (and adopted in the Draft Gunnedah CKPoM).

The habitat categories are:

- (a) Primary Habitat – Areas of forest or woodland where primary koala food tree species comprise at least 50% of the overstorey trees.
- (b) Secondary (A) Habitat – Areas of forest or woodland where primary koala food tree species comprise less than 50% but at least 30% of the overstorey trees; or Areas of forest or woodland where primary koala food tree species comprise less than 30% of the overstorey trees, but together with secondary food tree species comprise at least 50% of the overstorey trees; or Areas of forest or woodland where secondary food tree species alone comprise at least 50% of the overstorey trees.
- (c) Secondary (B) Habitat - Areas of forest or woodland where primary koala food tree species comprise less than 30% of the overstorey trees; or Areas of forest or woodland where primary koala food tree species together with secondary food tree species comprise at least 30% (but less than 50%) of the overstorey trees.
- (d) Secondary (C) Habitat - Areas of forest or woodland where koala habitat is comprised of secondary and supplementary food tree species where secondary food tree species comprise less than 30% of the overstorey trees.
- (e) Other Vegetation - Areas of forest or woodland where primary and secondary koala food tree species are absent, but which have important supplementary koala habitat values such as habitat buffers and habitat linking areas.

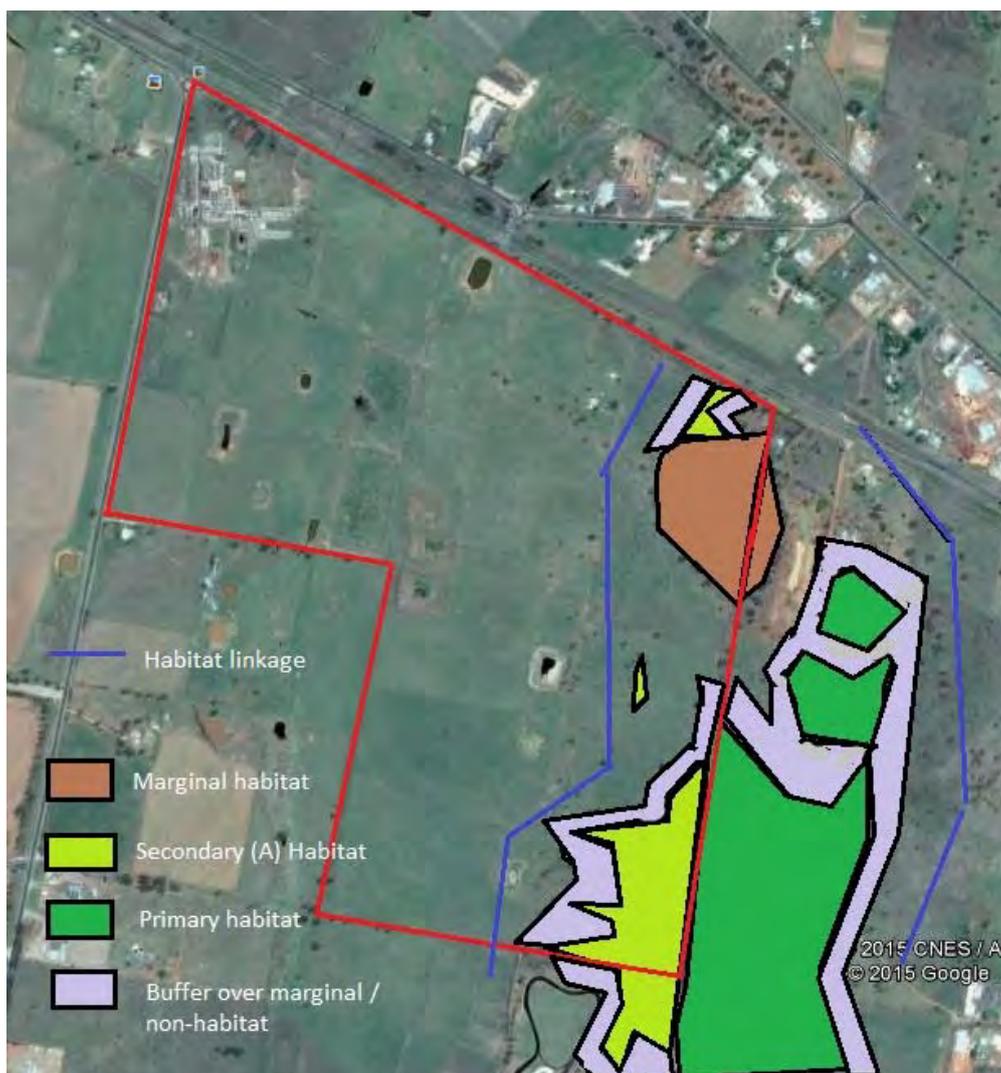


Figure 4. Koala Habitat Mapping of the site and adjacent lands

The AKF's Koala Habitat mapping depicts site as containing Secondary (A) Habitat while the mapping for the Draft Gunnedah Koala Management Plan depicts it containing Secondary (B) habitat. However ground-truthing of the site has provided more accuracy of the occurrence and extent of these habitat categories (Figure 4).

Due to the fact that the eucalypt canopy has been reduced on the site, when compared to adjacent woodland, giving it a cover of primary feed trees of less than 50%, the grassy woodland area containing the preferred Koala Feed Trees is Secondary (A) Habitat. The ironbark-cypress hill to the north is marginal habitat ("Other Vegetation") which lies within the overall habitat linkage zone. Also shown in Figure 4 is habitat buffers (generally 50 m wide) which are areas where reduced human activity is desirable.

All the primary habitat is located off the site, however, the close proximity of primary habitat and the lack of any substantial barrier in between ensures that the site is being regularly used by the local population.

In total, approximately 12 ha of secondary (A) Koala habitat exists on the site. Adjacent areas of primary Koala habitat account for some 30 ha, though merges into additional areas of habitat southward along the adjacent ridgeline. The extent of 'preferred' Koala habitat in the LGA is approximately 40,000 ha (BioLoaning Greenstudies 2013). Current development plans indicate that no mapped Koala habitat will be removed. No

‘core Koala habitat’ will be adversely affected provided development is restricted from a Koala Management Area as identified in this Plan (Section 4).

3.4 Population size

Estimates of Koala populations should be provided at the local and regional scale in order to assess extent and significance of impact of any development proposal.

Only one animal was observed on site and along bushland adjacent to the eastern perimeter road, though more individuals may have been present in the local vicinity on land where access was not possible at the time.

In an assessment of the regional Koala population, the Draft Koala Management Plan (BioLoaning Greenstudies 2013) estimated an average density of 0.3 individuals/ha across the LGA with a total population size of 12-13 000 animals, a figure derived from extrapolating the results from a number of surveys of ‘high-use’ areas (locations with >40% activity levels) However, not all areas of ‘preferred’ habitat such as the site subject to this Plan are occupied at a consistent ‘high density’.

However, given the lower density observed at the site, the size of the ‘local population’ (that found using the site and on adjoining habitat amounting to some 40 ha) is likely to be in the order of 4-12 animals. This refers to the number of animals potentially using this area at any one time, given that Koalas are relatively mobile and composition and demographic make-up of the local population may vary over time. Whatever the size of the regional or local population, the potential impact of the development on Koalas at a local or regional scale would be negligible.

3.5 Local Habitat Connectivity

The NSW Wildlife Atlas (via BioNet) was accessed on the 16 June 2015 to obtain Koala records for the Gunnedah LGA (Figure 3). The site is surrounded by a cluster of records of various ages. If the volcanic ridge that lies to the west of the township is followed south (indicated by arrows in Figure 3), another cluster of

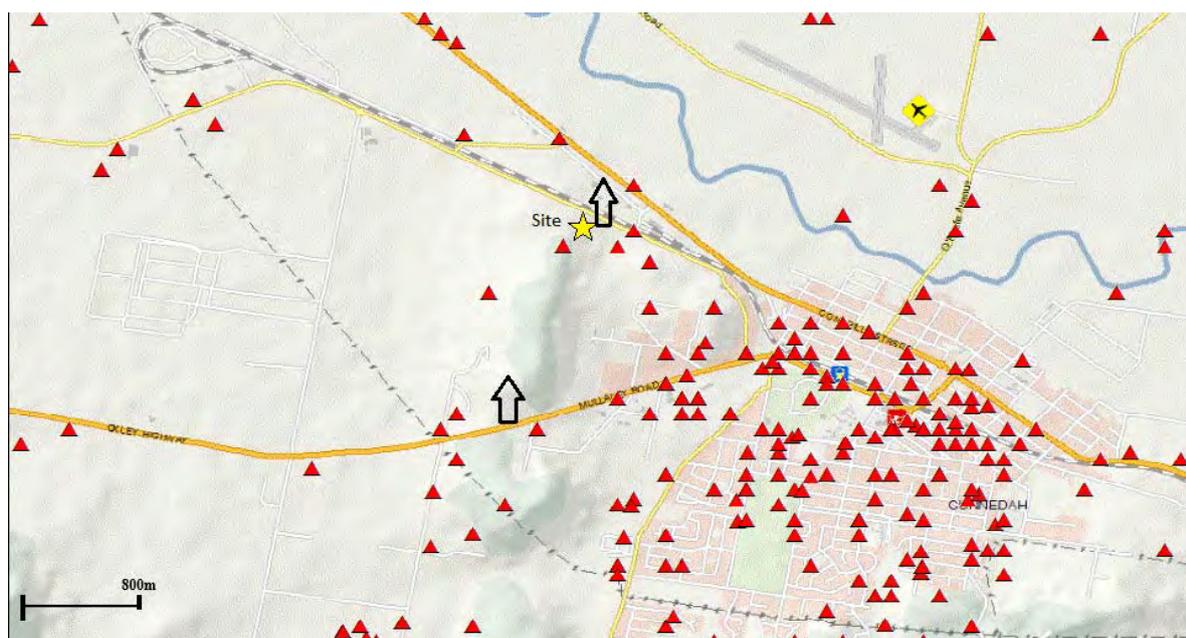


Figure 3. Koala records Gunnedah LGA (NSW NPWS Atlas, 2014)

records occurs to the south of the Oxley Highway. This ridge is the largest of area of continuous vegetation within a close proximity to Gunnedah, containing significant areas of preferred Koala habitat, particularly associated with the sedimentary soils on the lower slopes.

The Draft Gunnedah Koala Management Plan (BioLoaning Greenstudies 2013), though not yet adopted by Council, shows that the site is part of a corridor of 'secondary' habitat running north – south, just to the west of Gunnedah township. The site is close to a 'high-use area' (activity level >40%) as identified in the draft Plan. The connectivity of this corridor will not be adversely affected and measures will be taken to enhance the habitat within the section of this corridor within the site (Section 4).

3.6 Existing adverse impacts

There a number of adverse processes that may threatened the local occurrence of the Koala within and adjacent to the site, these include:

- (a) *Grazing*. The site currently experiences relatively light levels of grazing, though it is probable that the grazing has occurred over a long period of time. Grazing pressure will inhibit the recruitment of feed trees and general habitat for the Koala. Some *Eucalyptus* and *Callitris* regeneration has occurred across the site.
- (b) *Dog activity*. It is widely recognised that dogs are a major issue for Koalas in the LGA due to injury and death resulting from attacks. No signs of dog activity at the site was apparent, and given the current land usage, attacks by dogs in this area are not likely to be significant.
- (c) *Tree removal*. Trees have been removed across the site in historic times, however, there are no obvious signs of recent tree removal.
- (d) *Loss of habitat connectivity*. Koala habitat in the vicinity of the site has been reduced in historic times, in particular, the connectivity of habitat to the north is fragmented by road and rail infrastructure making connection to the Namoi River where extensive primary habitat exists tenuous. However these matters lie outside the area considered in this plan.
- (e) *Disease*. The Koala present on the site appeared to be disease free, though disease is present in the animals in the LGA (BioLoaning Greenstudies 2013). A factor thought to be influencing the spread of disease such as *Chlamydia* in Koala populations is stress, enhancing areas of habitat is likely to reduce contact of Koalas with stressors.
- (f) *Rubbish*. A substantial domestic rubbish dump exists on the site, which contains plastics as well as large amounts of corrugated iron. These materials may cause injury or become attached to Koalas traversing the area.

4. Recommended actions to enhance Koala usage of the site

4.1 Objectives

The objective of SEPP 44, including this Koala Plan of Management, is to:

“... encourage the proper conservation and management of areas of natural vegetation that provide habitat for koalas to ensure a permanent free-living population over their present range and reverse the current trend of koala population decline.”

Specifically, this Plan intends to fulfil the primary objective, by:

- preventing inappropriate tree loss,
- rehabilitating areas of existing core habitat and buffer zone to enhance Koala use of the site,
- cleaning up human refuse from the site,
- restricting grazing, and
- to manage Koala movements into and out of the site with appropriate fencing.

Of primary concern for the local population is the strip of land along the site’s eastern boundary, an area which offers continuous habitat with adjoining primary habitat. This area was identified as a ‘Scenic Protection Zone’ by Ecobiological (2007) in order to preserve local biodiversity values with respect to a previous development application, including those of the Koala. This Plan supports the intent of this proposal as Koala values of this area can be enhanced with some low-cost, management practices which could be implemented over the longer term.

Ultimately, the zoning of this land by Council for Environmental Protection would also enhance the management of this strip for environmental or conservation purposes, and would be consistent with the recommended actions of this Plan.

4.2 Tree loss

It is anticipated that the majority of the site be used for industrial purposes as per the zoning of this land and in view of the current proposal by Ironbark enterprises. In relation to Koala habitat, loss of feed trees should be kept to a minimum. This is assisted by the establishment of a Koala Management Area (KMA) which aims to protect the majority of Koala habitat on the site from habitat loss and to target habitat enhancement efforts. A suggested KMA is shown in Figure 5. It has been broken down into three management zones (see Section 4.3).

Approximately seven mature eucalypt trees lie outside this KMA, including Koala feed trees of the species *E. melliodora* as isolated paddock trees. If this area is to be developed it is not advisable to retain these trees which may attract Koalas into a hostile environment and their removal is recommended under these circumstances.

Tree removal protocols must be adhered to while removing these trees and should include a pre-removal check by an ecologist for Koala presence within the trees to be removed.

- If Koala(s) are present, tree removal should be postponed until Koala moves from the tree of its own accord.
- If no Koalas are present, then the trees can be removed.

In addition, within the KMA, it is recommended that no further tree removal for firewood or any other purpose be undertaken.

4.3 Rehabilitation Management Zones

The KMA has three management zones, Zone A, B and C, based on specific vegetation and management issues of the site. The features and objectives of each are outlined below:

Zone A – Ironbark Cypress Hill and northern slopes.

This zone is dominated by the low quality Koala habitat on the ridge itself, though habitat containing Yellow Box, Hill-top Red Gum and White Box is found around the bottom of the hill and on the slopes to the north where some Secondary (A) Habitat is mapped. Recommended Actions:

- (a) Habitat enhancement. Koala feed tree planting and targeted weed removal centred on one revegetation zone around area of Secondary (A) Habitat, within its buffers and around the base of the hill (*E. albens*, *E. dealbata*, *E. melliodora*).
- (b) Rubbish removal (Standing old dwelling has considerable debris and material lying around)

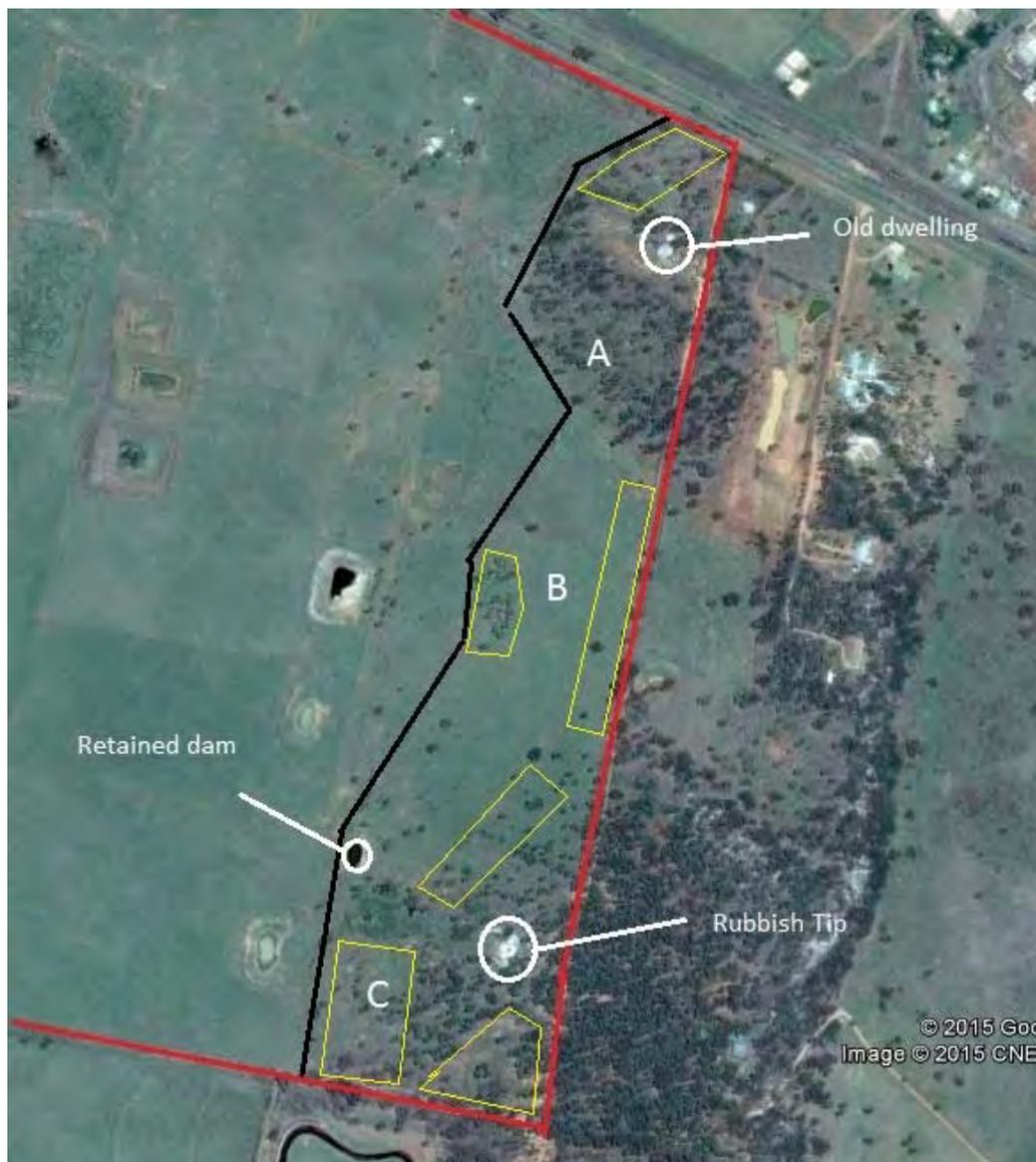


Figure 5. Koala Management Area (recommended revegetation zones marked as yellow polygons)

Zone B. Cleared land with scattered trees

This area of land lies between the two wooded areas to the north and south and is generally dominated by exotic pasture and scattered cypress trees. This zone contains no Koala habitat, though links the two wooded areas. Recommended Action:

- (a) Habitat enhancement. Koala feed tree plantings – primarily in two recommended revegetation zones along western boundary and around tree clumps (*E. albens*, *E. dealbata*).

Zone C. Grassy Box gum woodland.

This zone contains most of the Koala habitat on the site. And should be the main focus of habitat restoration activities. There is a farm dam on the north-western edge of the zone which should be retained in the KMA in order to provide water for Koalas during dry periods. Recommended actions:

- (a) Habitat Restoration. Overstorey plantings of Koala feed trees (*E. albens*, *E. dealbata*) and targeted weeding (particularly noxious species) in three recommended revegetation zones.
- (b) Rubbish removal – a private tip is found in zone containing a considerable amount of domestic rubbish (Photo 8). Plastics and metals provide hazards for wildlife while providing habitat for snakes.



Photo 8. Rubbish Tip in Zone C.

4.4 Habitat restoration

Pending adoption of this Plan of Management by the consent authority, the landowner is required to undertake a Revegetation Plan for the site. It is outside the scope of this Plan to identify costings, specific planting schedules, sourcing of seedling, maintenance, length of proposed monitoring and replacement periods, though some site specific recommendations can be made.

- a) The total recommended area to be restored and/or rehabilitated is 6.7 ha, broken down into the three zones that is:
 - Zone A: 1 ha (one area)
 - Zone B: 2.2 ha (two areas)
 - Zone C: 3.5 ha (three areas)
- b) The number of trees/plants to be planted depends primarily upon a target tree density per hectare. While recommended densities varies for plantings in box-gum communities, the aim is to produce around 30 mature trees per hectare (Prober and Thiele 2005) for any given cohort. Mortality rates are impossible to predict, though if assumed that at least 25% will survive to maturity, a planting density of 200 established young trees per hectare would be sufficient to achieve the target, given that maintenance and monitoring activities would be undertaken.

Given this recommended tree planting density, any Revegetation Plan undertaken for the KMA would need to allow for the initial planting of 1,340 young trees, 200 trees for Zone A, 440 trees for zone B and 700 trees for Zone C.

In terms of species mix, equal numbers should be planted of *E. albens*, *E. dealbata* and *E. melliodora*, depending on the zone in question. Seed ideally should be sourced locally, though it is better to use seed from further afield than to use locally sourced seed that is bad.

Other habitat restoration actions recommended for the KMA are:

- No firewood collection or timber cutting is to be undertaken in the KMA. All fallen wood and hollow logs should be retained; this allows the accumulation of carbon, encourages nutrient cycling, increases levels of soil carbon, and is beneficial for native understorey species.
- Weeding should be undertaken in the KMA, and should not be restricted to the revegetation areas. All vehicles should be inspected for weeds prior to entry/exit at the site, as should individuals' footwear and clothing.
- Avoid the use of fertilisers and residual herbicides.
- Control of growth by fire should be avoided while plants are becoming established, at least for the first twenty years.

Parties responsible for the undertaking of all works and activities included in the plan, and if the revegetation is to take place on other than public land, how the revegetation will be maintained in perpetuity for the benefit of Koala recovery should be specified. There are a number of options available, including:

- Conservation Agreements (OEH)
- Trust Agreements (Nature Conservation Trust)
- Biobanking Agreement (OEH)
- Property Vegetation Plan (CMA)
- Environmental Stewardship Programme

Rezoning of the land to Environmental Protection by Council, while not regarded as an 'in perpetuity' arrangement is a desirable outcome, given the potential of the site to be included in LGA-wide restoration or monitoring actions that may be generated by the pending Gunnedah CKPoM.

4.5 Grazing

Grazing is currently undertaken in areas mapped as Koala habitat, though in order to promote natural regeneration of overstorey and understorey species, and to reduce cow-Koala interactions, grazing in areas of identified Koala habitat should not be undertaken. Promoting natural regeneration of native species is the most cost-effective way to enhance Koala habitat.

If grazing is introduced, extreme care must be taken to avoid stock having access to rehabilitation areas and should not be kept in the area for extended periods.

4.6 Fencing

There is an existing old fence-line along the eastern boundary (Photo 9) composed of low wooden posts and in some places holes in the fence allowing passage of Koalas from adjoining habitat. This fence-line should be maintained in its current form with repairs as necessary, though the retention of wooden posts is essential to allow Koalas to move into and out of the KMA.

For the western boundary of the KMA, a Koala-proof fencing is recommended to discourage Koalas entering the area both during and after construction. Different designs are available, though a colour bond or other steel framed fencing is recommended. The fence doesn't have to be of a high height, though it is essential in the design of Koala-proof fencing that it:

- (a) Does not contain wooden posts or cross-bars for Koalas to climb; and
- (b) Does not have a gap at the bottom to prevent Koalas from moving underneath.

The NSW Koala Recovery Plan (2008) recommends colour bond fencing.



Photo 9. Existing eastern boundary fence allowing Koala access onto site

4.7 Monitoring and performance criteria

Koalas are under ongoing development pressure in the Gunnedah LGA and are also susceptible to climate change effects (Lunney *et al.* 2013). The land subject to this Plan of Management should be included within a wider monitoring programme for the Gunnedah LGA, one that is capable of detecting future population trends and levels of habitat occupancy. It is noted that under the Draft CKPoM, Gunnedah Shire Council would take the lead role in overseeing the implementation of 'monitoring Koala populations and the effectiveness of the Plan'. With no specific sources of funding, Gunnedah Council is to investigate sources of funding for such a program which is to initiate the program no more than 3 years following the commencement of the Plan, and to be undertaken at no less than 50% of the sites identified in the CKPoM at 3 year intervals.

However, in order to ensure that this Plan is compliant with the intent of the SEPP44, it is strongly recommended that such a programme include those lands subject to this individual Plan.

The DA before Council identifies this land would be set aside as an Environment Protection Area and dedicated to Council. Subject to Council accepting this proposal, and subsequent adoption of the Draft CKPoM, Council would retain the responsibility for the management the site and for undertaking rehabilitation and monitoring actions.

Until adoption of the Draft CKPoM, the proponent would assume responsibilities to undertake monitoring of the site at three year intervals. This monitoring would be undertaken by an experienced Koala expert and could include the specific measures:

- Assessment of recent (scat searches) and current usage (individual surveys);
- Evidence of breeding animals on or adjacent to the site; and
- Evidence of habitat improvement for the Koala (success of rehabilitation efforts).

So that this Plan is consistent with the intent of the SEPP 44, the chief performance criterion is that Koala activity is maintained or increased at the site. Specific performance criteria should be able to quantify the success of the specific measures:

- Activity levels as evidenced by scat searches do not fall below 30%;
- Breeding animals continue to use the site; and
- There is an increase in the number of feed trees at the site.

5. References

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