DEVELOPMENT APPLICATION
GUNNEDAH KOALA SANCTUARY
LOT 328 & 329 DP755503

Image of Koala observed in Emerald Hill Febuaray 2019

SEPP (KOALA HABITAT PROTECTION) 2020 ASSESSMENT REPORT

DATE: 15 APRIL 2021

PREPARED FOR:
Dunn & Hillam / Gunnedah Shire Council

PREPARED BY:
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Stewart Surveys Reference 5284

REPORT PREPARATION

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This SEPP (Koala Habitat Protection) 2020 Assessment report has been prepared by our office to accompany a council application. To the best of our knowledge, the content of this statement is true in all material particulars and does not, by its presentation or omission of information, materially mislead.

SITE PARTICULARS

Lot Particulars:	**Lots 328 & 329 in DP 755503**
Address:	**3130 Oxley Highway**
Local Government Area:	**Gunnedah**
Report prepared for:	**Gunnedah Shire Council C/o- Dunn & Hillam Architects**
Land Zoning:	**RU1 Primary Production/E3 Environmental Management**
Date:	**15th April 2021**

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INTRODUCTION

Kathryn Yigman of Stewart Surveys has been engaged by Dunn & Hillam Architects, on behalf of Gunnedah Shire Council, to conduct a State Environmental Planning Policy (Koala Habitat Protection) 2019, hereby referred to as SEPP assessment, to accompany a development application for a Wildlife Sanctuary and Koala Hospital on Lots 328 and 329 in DP755503, known as 3130 Oxley Highway, Gunnedah.

This project commenced in January 2020. Since the commencement of this project the State Environmental Planning Policy (Koala Habitat Protection) have changed multiple times. The development application (DA2021/22) was lodged on the 9th March 2021. State Environmental Planning Policy (Koala Habitat Protection) 2019 was repealed and replaced with SEPP 2020. This has subsequently been repealed and replaced with SEPP 2021. However, at the date of the application lodgement with Gunnedah Shire Council SEPP 2020 was in force. SEPP 2021 came into effect on 17 March 2021, after the lodgement date. Part 4 of SEPP (Koala Habitat Protection) 2021 clause 18 states that a development application made in relation to land but not finally determined before this policy applied to the land, must be determined as if this policy had not commenced in its application to the land. Thus this assessment for the development has been prepared under SEPP 2020.

PROPOSED DEVELOPMENT

It is proposed to construct a Koala Sanctuary over two stages at the site. The site has been owned by Gunnedah Shire Council for a long time. In the western section of the site there is an established kart track and motorcycle track. These two developed areas occupy most of Lot 328 in DP755503. In the eastern section of the site on Lot 329 in DP755503, the site has been formally utilised as a gravel quarry, and the hard floor of the former quarry remains on site today. A gravel track provides access to the quarry area from the Oxley Highway. Along this access track there are areas of the site which are in a degraded condition, with some areas containing past construction waste such as broken concrete and bitumen. The western section of Lot 329 is largely remnant native vegetation.

It is proposed to remediate the degraded sections of the site and construct a wildlife sanctuary. This development will provide a tourism attraction for Gunnedah. The wildlife sanctuary contains a commercial café, fully enclosed wildlife park, koala rehabilitation hospital, petting zoo, animal enclosures, a mini golf course, playground and a number of amenities for picnicking and passive recreation. These facilities are located in the central part of the site. A new bitumen access road is provided from Hunts Road with a bitumen sealed carpark in close proximity to the facilities. The development includes a range of accommodation including: eco-tourism tents and caravan camping sites, a managers residence and volunteers accommodation. These facilities are located in the southern section of the site near the Oxley Highway. An amenities, camp kitchen and bushfire refuge building is proposed in close proximity to the camping areas.

Generally, the site is considered to be a low-density development of an eco-tourism nature. Some clearing is required to meet the bushfire protection requirements for the development and to enable construction of proposed facilities. Proposed works and buildings have been located in areas of the site that have already been cleared, to minimise impacts on native vegetation. Further details on clearing areas are outlined in the Biodiversity Report.

The proposed development, being an eco-tourism facility, includes the planting of a tree plantation of Koala feed tree species, areas of bush regeneration and planting of native vegetation for amenity.

STATE ENVIRONMENTAL PLANNING POLICY (KOALA HABITAT PROTECTION) 2020

ASSESSMENT

Gunnedah Shire Council is listed as containing Koala habitat under the SEPP. This policy states that for all land greater than 1 hectare in size, before Council may grant consent to an application to carry out development on land it must first determine whether or not the land is a potential koala habitat. In the policy a potential koala habitat is defined as:

*"Areas of native vegetation where the trees listed in Schedule 2 of SEPP (Koala Habitat Protection) 2020 (**Table 1**) constitute at least 15% of the total number of trees in the upper and lower strata of the tree component".*

Scientific Name	Common Name
Eucalyptus tereticornis	Forest red gum
Eucalyptus microcorys	Tallowwood
Eucalyptus punctata	Grey Gum
Eucalyptus viminalis	Ribbon or manna gum
Eucalyptus camaldulensis	River red gum
Eucalyptus haemastoma	Broad leaved scribbly gum
Eucalyptus signata	Scribbly gum
Eucalyptus albens	White box
Eucalyptus populnea	Bimble box or poplar box
Eucalyptus robusta	Swamp mahogany

Table 1: List of SEPP – Schedule 2 preferred Koala Feed Trees

The subject site has an area of 35.27 hectares and can be described as a timbered block with a former quarry in the north eastern sections and recreation infrastructure in the western section including a go-kart and motorcycle track. **Figure 1** is an aerial photo of the holding and site photos in **Figure 2 to Figure 5** illustrate the site character.

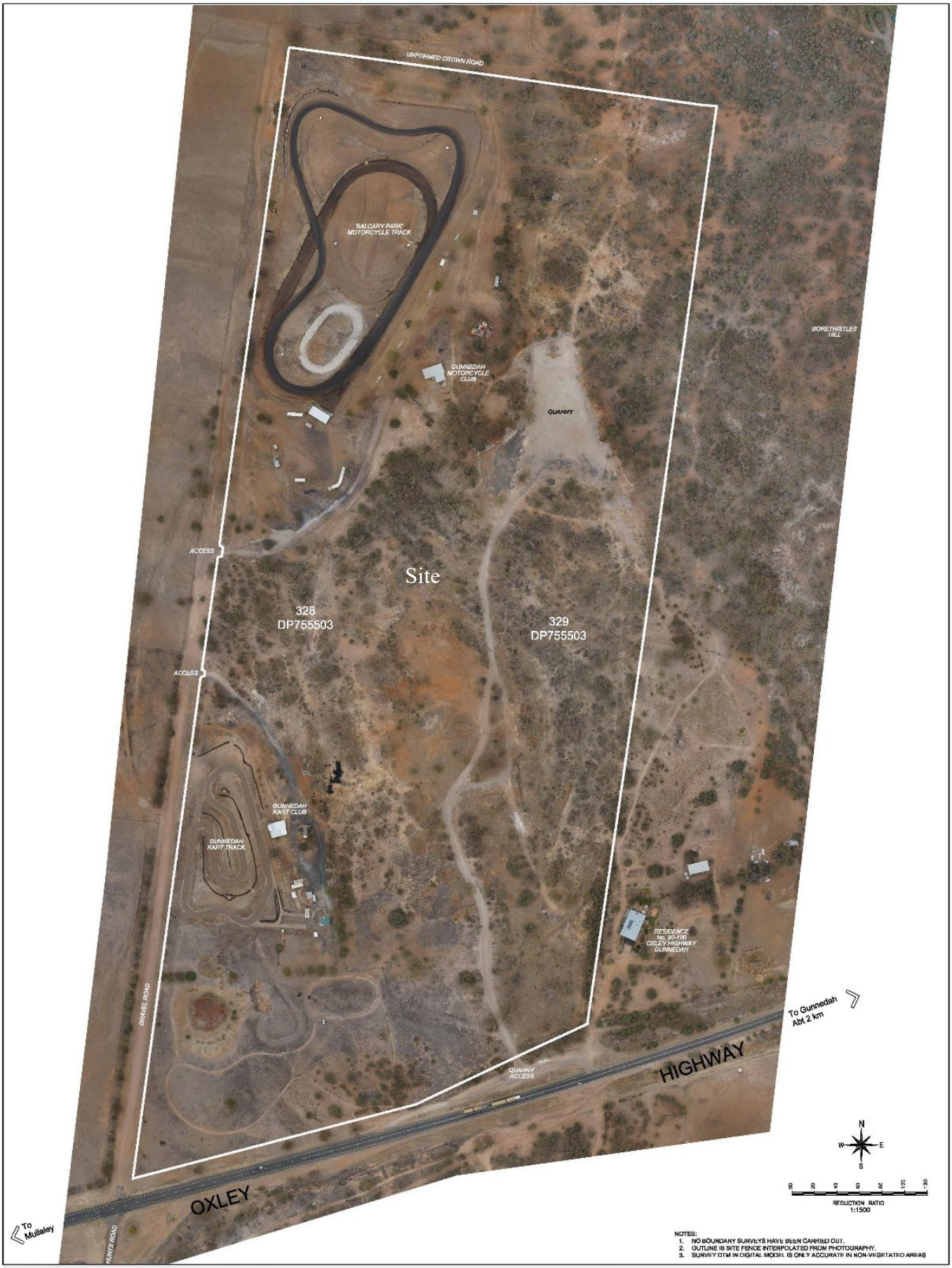


Figure 1: Site Plan (Survey by Stewart Surveys Pty Ltd)

Figure 2: Typical photo of timbered country in the eastern section of the site

Figure 3: Typical photo of Cypress Pine timbered country in the eastern section of the site

Figure 4: Typical photo of timbered country in the eastern section of the site

Figure 5: Photo from within the site looking to the Oxley Highway

In order to determine if the site meets the definition of potential Koala habitat a combination of Area Environmental Consultants ecologists investigations were adopted along with a site inspection carried out on 12th August 2020 by Kathryn Yigman who meets the definition of a suitably qualified person to conduct the inspection under the SEPP. **Figure 6** shows the ecologists survey efforts across the site.

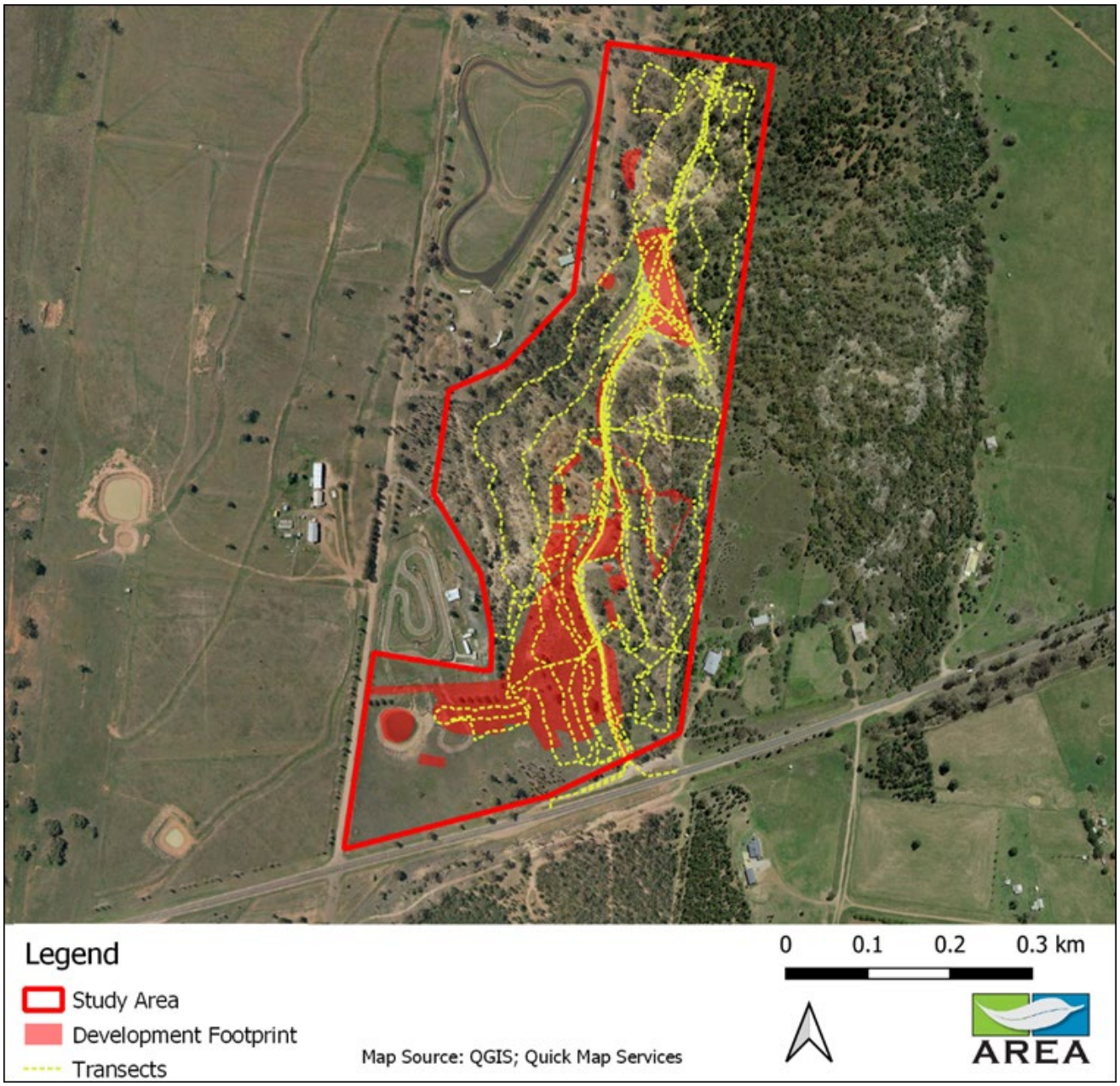


Figure 6: Survey Efforts (Area Environmental Consultants)

Area Environmental Consultants mapped regional vegetation community PCT 592 Narrow-leaved Ironbark - cypress pine - White Box shrubby open forest as the dominate vegetation across the site. This PCT occupied 21.2 hectares of the site. A small area of 0.6 hectares was mapped as PCT 101 Poplar Box - Yellow Box - Western Grey Box grassy woodland on cracking clays. The balance of the site does not fit a standard vegetation profile due to modifications to the landscape.

The vegetation in PCT 592 is described as

> *Tall or mid-high open forest to woodland dominated by Narrow-leaved Ironbark (Eucalyptus crebra), White Cypress Pine (Callitris glaucophylla) and/or White Box (Eucalyptus albens). Other trees may include*

Tumbledown Red Gum (Eucalyptus dealbata) or Silver-leaved Ironbark (Eucalyptus melanophloia). There is usually a sparse shrubby understorey with Beyeria viscosa, Notelaea microcarpa var. microcarpa and Dodonaea viscosa subsp. angustifolia most frequent. Other shrubs include Breynia cernua, Solanum parvifolium, Melichrus urceolatus, Spartothamnella juncea and Psydrax oleifolia. The ground layer includes the sub-shrub Desmodium brachypodum and grass species such as Austrostipa scabra subsp. scabra, Austrodanthonia racemosa var. obtusata, Microlaena stipoides var. stipoides, Aristida ramosa and Cymbopogon refractus. Forb species include Dichondra species A, Calotis anthemoides, Vernonia cinerea var. cinerea, Brunoniella australis and Arthropodium sp. B. Climbers include Desmodium varians and Glycine clandestina. Occurs in loamy soils derived from volcanic or sedimentary substrates on hillslopes, footslopes and flats in hill landscape patterns mainly in the Mount Kaputar to Keepit Dam regions with outliers to the east and south of Mount Kaputar.

The vegetation in PCT 101 is described as:

Tall woodland or open woodland dominated by Poplar Box (Eucalyptus populnea subsp. bimbil) sometimes with Yellow Box (Eucalyptus melliodora), White Cypress Pine (Callitris glaucophylla), Silver-leaved Ironbark (Eucalyptus melanophloia) or rarely with Western Grey Box (Eucalyptus microcarpa). A very sparse shrub layer may be present, or it is absent. Shrub species include Wilga (Geijera parviflora), Mock Olive (Notalea microcarpa), the bluebush Maireana microphylla, Wild Orange (Capparis mitchellii) and Western Rosewood (Alectryon oleifolius). The ground cover is usually dense and is dominated by a rich array of grass and forb species. Grass species include Austrostipa verticillata, Queensland Bluegrass (Dichanthium sericeum subsp. sericeum), Bothriochloa decipiens, Austrodanthonia bipartita, Enteropogon acicularis, Aristida personata, Aristida ramosa, Austrostipa aristiglumis, Austrostipa scabra subsp. scabra, Themeda australis, Eulalia aurea, Paspalidium jubiflorum, Chloris truncata and Chloris ventricosa. The more palatable grasses such as Themeda australis and Eulalia fulva have often been grazed out. Forb species include Rumex brownii, Einadia nutans, Cotula australis, Maireana enchylaenoides, Erodium crinitum, Calotis lappulacea, Rostellularia adscendens subsp.adscendens, Sida corrugata, Oxalis exilis, Einadia hastata, Vittadinia dissecta var. hirta, Vittadinia muelleri, Vittadinia sulcata, Chrysocephalum apiculatum, Solanum cinereum, Abutilon oxycarpum, Dichondra sp. A, Wahlenbergia stricta subsp. stricta, Pycnosorus globosus, Goodenia fascicularis and Brunoniella australis. Occurs on alluvial cracking clay soils derived from volcanic or sedimentary substrates on alluvial plains or gently undulating slopes in the Brigalow Belt South Bioregion particularly in the Liverpool Plains sub-region with areas also occurring in the Northern Basalts sub-region. Mostly cleared for grazing and cropping. Weed species may be abundant and include Rapistrum rugosum, Medicago polymorpha, Lepidium africanum, Avena ludoviciana, Malva parviflora, Hedypnois rhagadioloides and Sisymbrium irio. Grades into grasslands on black earth soils (IDs 52 & 102) and upslope on hillsides into grassy White Box (Eucalyptus albens) - White Cypress Pine woodland (ID433, ID434, ID435). Mostly cleared, with few large remnants remaining and small remnants occurring on roadsides or on private land. Part of the extent listed as an endangered ecological community under the TSC Act covering vegetation on cracking clays in the Liverpool Plains sub-region. Very poorly protected.

The full vegetation profiles for PCT 592 and PCT 101 are appended to this report.

The SEPP 2020 Koala Feed tree species which are present on the site are listed in **Table 2**.

Scientific Name	Common Name
Eucalyptus albens	White box
Eucalyptus populnea	Bimble box or poplar box

Table 2: List of Koala feed trees observed on site

Based on my inspection of the site on 12th August 2020 I estimate that the two SEPP 2020 Koala feed trees species distribution of vegetation on the site makes up approximately 5% of the tree species present on the site. Therefore, based on our site inspection and the ecologist vegetation assessment Lots 328 and 329 in DP755503 do not meet the definition of potential Koala habitat under State Environmental Planning Policy (Koala Habitat Protection), 2020.

Clause 8 of the policy states that if council are satisfied that the land is not potential koala habitat, it is not prevented, because of this policy, from granting consent to the development application.

Yours faithfully
STEWART SURVEYS PTY LTD

Kathryn Yigman
Registered Landscape Architect #001493
Bachelor Landscape Architecture (UNSW)
Masters of Environmental Management (UNSW)

APPENDIX

Area Environmental Consultants site observations

Plant Community Profiles
PCT 592 Narrow-leaved Ironbark - cypress pine - White Box shrubby open forestin the Brigalow Belt South Bioregion and Nandewar Bioregion

PCT 101 Poplar Box - Yellow Box - Western Grey Box grassy woodland on cracking clay soils mainly in the Liverpool Plains, Brigalow Belt South Bioregion

Survey took place 12 to 14 March (three days / nights).

The assessment was undertaken by Greg Bible (ecologist) and myself. I'm the suitably qualified and experienced person for the Koala part of the assessment – see Table below.

1.1.1 Assessment personnel

Field assessment and report writing was completed by Phillip Cameron. Phillip meets the criterion as a suitably qualified person (see Table 2-1).

Table 2-1: Summary of AREA project teams' qualifications

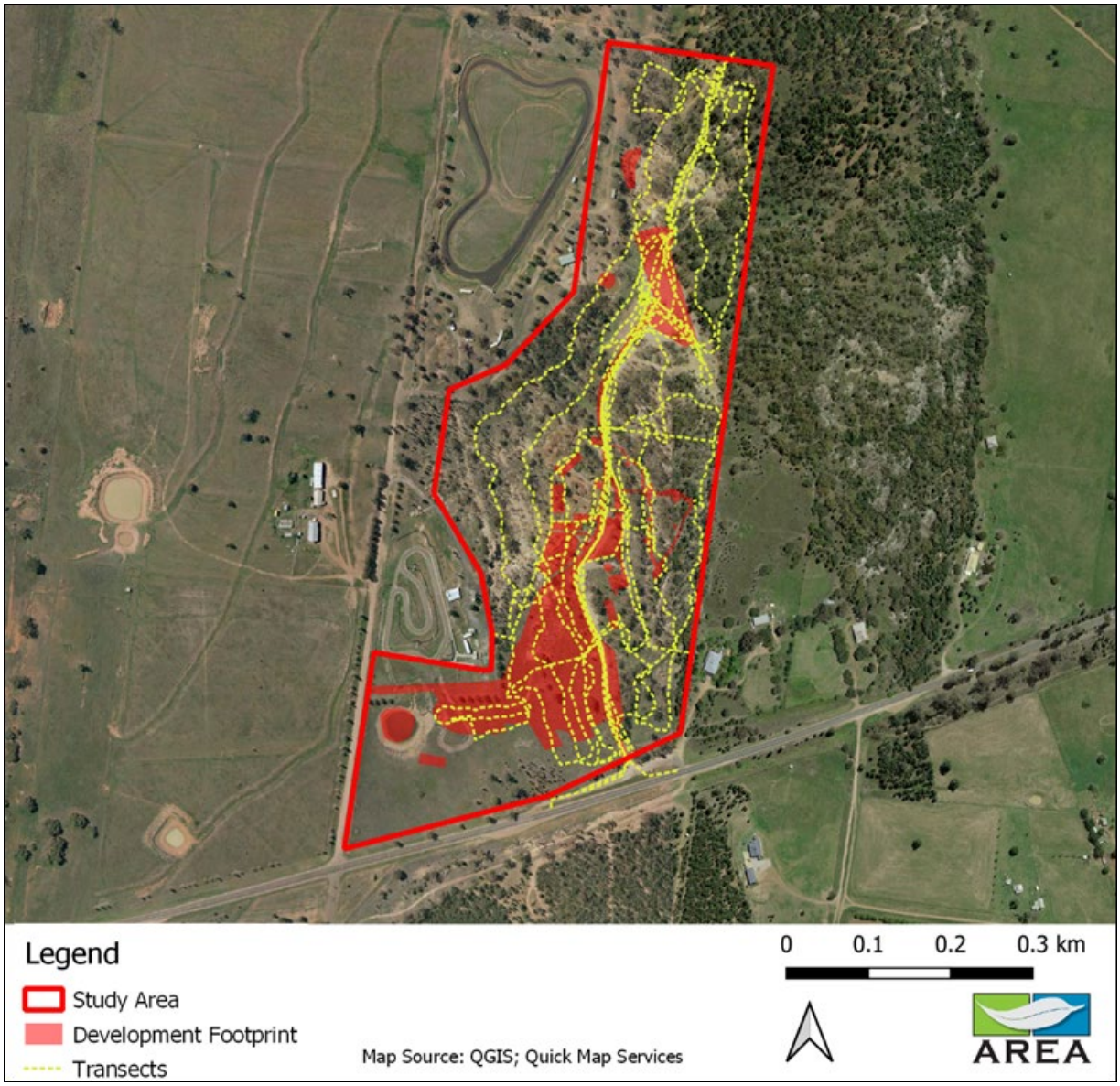
Name	Phillip Cameron
Position	Principal consultant
CV Details	• BSc. Macquarie University • Ass Dip App Sci. University of Queensland. • Certified Environmental Practitioner (EIANZ) and practicing member. • NSW OEH BioBanking and Bio-certification Assessor: accreditation number 0117. • NSW Biodiversity Assessment Method Assessor: accreditation number BAAS17082). • Cert III Captive Vertebrate Management. • NSW OEH Scientific License: 101087. • NSW DPI Ethics Approval 17/459 (3). • Practicing member of the NSW Ecological Consulting Association. • WHS White Card and Blue Card. • Apply First Aid (Parasol) ID: 6007221.
Role in this report and experience	**Role** Ecology and koala assessment and report writing. **Experience** Phil has 30 years of experience with Koala assessment as a consultant for environmental impact assessments and captive management with Taronga Western Plains Zoo and Lone Pine Koala Sanctuary. Phillip has appeared as a Koala Expert Witness in the Land & Environment Court. As an ecologist, accredited Biodiversity Assessment Method assessor and ex-zookeeper Phillip uses: • Threatened Species Survey and Assessment Guidelines draft guidelines 2004 and BioNet Threatened Species database to survey for Koala. • The commonwealth SAT technique to determine presence / absence of Koala • Botanical skills to identify Koala food trees to species level • Zookeeping experience to be able to tell the difference between Koala scats and other scats that are similar Phillip has 16 years of experience as an environmental impact assessment consultant. Phillip is currently the Principal Consultant for AREA and in the last 10 years was the Principal Ecologist for OzArk Environmental & Heritage Management. In these roles Phillip completed 100s of Koala assessments including for more than ten State Significant Developments and has applied searches for Koala scats following (Phillips and Callaghan 2011) the Scat Assessment Technique (SAT) at a maximum grid spacing of 250 m.

1.1.2 Part A assessment – Koala assessment

Field assessment was conducted over three day in March 2020 by an appropriately qualified person. All suitable trees were checked for the presence of Koalas – indirect evidence of Koala was observed during the assessment.

Gunnedah, approximately 4.5 kilometres east of the development footprint, recorded no rainfall according to Bureau of Meteorology in the 24 hours prior to 9am on the day of the assessment. http://www.bom.gov.au/jsp/ncc/cdio/weatherData/av?p_nccObsCode=136&p_display_type=dailyDataFile&p_startYear=2019&p_c=-605690185&p_stn_num=055023. Therefore, the searches for scats following (Phillips and Callaghan 2011) the Scat/Spot Assessment Technique (as per SEPP guidelines) was applicable.

The area around the base of the trees was checked for scats and the trees were checked for scratches and none were identified. Survey effort is illustrated in Figure XXX



1.1.3 Part B assessment – Habitat assessment

The vegetation survey and habitat assessment for the BDAR and KAR was completed using field survey methods in line with Chapters 5 and 6 of the Biodiversity Assessment Method (BAM) and by implementing the guidelines for Threatened Biodiversity Survey and Assessment (DEC, 2004) and NSW Guide to Surveying for Threatened Plants (2016).

The survey effort for all threatened flora was consistent with the document published by OEH: NSW Guide to Surveying Threatened Plants 2016. The ecologist walked along and around the impact area to search for threatened species or evidence of their presence and to determine likelihood of species presence in the impact area.

Preliminary understanding of the vegetation was by inspection of the NSW Government State Vegetation Map 4476 in the Border River Namoi/Gwydir region. This mapping was then ground-truthed during the assessments. Any corrections to this map were mapped as PCTs and any identified Threatened Ecological Communities (TECs).

Surveys were used to identify variation within vegetation zones in the development footprint. The structure, function and composition condition of PCTs were then assessed in accordance with Chapter 5 of the BAM. Vegetation zones were assigned by comparing the dominant canopy species, general description of location and landscape position, soil type and other attributes described in the TSPD (OEH 2016b) and OEH online VIS classification database (OEH 2016c).

AREA's ecologist field surveyed for three days to identify vegetation which may be impacted by the proposal and consider significance of impact to listed threatened species. This included identification of the plant community type and trees and shrubs in the development footprint and consideration of the habitat and biodiversity values of the area. AREA's ecologist recorded and assessed all trees within the development footprint.

Koala scats and scratches on trees were recorded at the following locations:

Scat: GDAz56 234662.181,6569423.731
Scratches GDAz56:
234662.181,6569423.731
234608.545,6569264.829
234613.538,6569243.704
234624.100,6569196.285

Neither scats nor scratches were considered to be recent i.e. within the last 12 months of the observation

Plant Community types recorded in the study area

id	Zone	m2	Ha	PCT	PCT Name	PCT description
11	1	51322	5.1	592	Narrow-leaved Ironbark - cypress pine - White Box shrubby open forest	Cleared. Grassy regen. Odd tree regen.
10	2	12707	1.3	592	Narrow-leaved Ironbark - cypress pine - White Box shrubby open forest	Heavy modification. Sparce regen
13	2	2083	0.2	592	Narrow-leaved Ironbark - cypress pine - White Box shrubby open forest	Heavy modification. Sparce regen
2	2	14800	1.5	592	Narrow-leaved Ironbark - cypress pine - White Box shrubby open forest	Heavy modification. Sparce regen
4	2	1348	0.1	592	Narrow-leaved Ironbark - cypress pine - White Box shrubby open forest	Heavy modification. Sparce regen
5	2	1542	0.2	592	Narrow-leaved Ironbark - cypress pine - White Box shrubby open forest	Heavy modification. Sparce regen
7	2	1670	0.2	592	Narrow-leaved Ironbark - cypress pine - White Box shrubby open forest	Heavy modification. Sparce regen
1	3	2685	0.3	592	Narrow-leaved Ironbark - cypress pine - White Box shrubby open forest	+ or - Disturbed with native regen
12	3	60576	6.1	592	Narrow-leaved Ironbark - cypress pine - White Box shrubby open forest	+ or - Disturbed with native regen
6	3	61508	6.2	592	Narrow-leaved Ironbark - cypress pine - White Box shrubby open forest	+ or - Disturbed with native regen
8	3	43	0	592	Narrow-leaved Ironbark - cypress pine - White Box shrubby open forest	Isolated tree
9	3	67	0	592	Narrow-leaved Ironbark - cypress pine - White Box shrubby open forest	Isolated tree
3	4	5940	0.6	101	Poplar Box - Yellow Box - Western Grey Box grassy woodland on cracking clays	Remnant woodland + or - ground surface disturbance

Phillip Cameron | Principal Consultant
CEnvP, BSc, Ass Dip App Sci, BAM accredited assessor
(BAAS17082)
AREA Environmental Consultants & Communication (ABN: 29 616 529 867)
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We acknowledge Traditional Owners and Custodians and their ancestors.

AREA wishes everyone a very merry festive season. We will be closed for a well-earned break from 19 December to 3 January and look forward to working with you in 2021.

BioNet Vegetation Classification - Community Profile Report

Plant Community Type ID (PCT ID): 592

PCT Name: Narrow-leaved Ironbark - cypress pine - White Box shrubby open forestin the Brigalow Belt South Bioregion and Nandewar Bioregion

Classification Confidence Level: 3-Medium

Vegetation Description: Tall or mid-high open forest to woodland dominated by Narrow-leaved Ironbark (Eucalyptus crebra), White Cypress Pine (Callitris glaucophylla) and/or White Box (Eucalyptus albens). Other trees may include Tumbledown Red Gum (Eucalyptus dealbata) or Silver-leaved Ironbark (Eucalyptus melanophloia). There is usually a sparse shrubby understorey with Beyeria viscosa, Notelaea microcarpa var. microcarpa and Dodonaea viscosa subsp. angustifolia most frequent. Other shrubs include Breynia cernua, Solanum parvifolium, Melichrus urceolatus, Spartothamnella juncea and Psydrax oleifolia. The ground layer includes the sub-shrub Desmodium brachypodum and grass species such as Austrostipa scabra subsp. scabra, Austrodanthonia racemosa var. obtusata, Microlaena stipoides var. stipoides, Aristida ramosa and Cymbopogon refractus. Forb species include Dichondra species A, Calotis anthemoides, Vernonia cinerea var. cinerea, Brunoniella australis and Arthropodium sp. B. Climbers include Desmodium varians and Glycine clandestina. Occurs in loamy soils derived from volcanic or sedimentary substrates on hillslopes, footslopes and flats in hill landscape patterns mainly in the Mount Kaputar to Keepit Dam regions with outliers to the east and south of Mount Kaputar.

Variation and Natural Disturbance: Not assessed.

Vegetation Formation: Dry Sclerophyll Forests (Shrubby sub-formation);

Vegetation Class: Western Slopes Dry Sclerophyll Forests;

IBRA Bioregion(s): Brigalow Belt South; Nandewar;

IBRA Sub-region(s): Kaputar; Liverpool Plains; Northern Basalts; Peel; Pilliga; Nandewar Northern Complex;

LGA: GUNNEDAH; TAMWORTH REGIONAL; GWYDIR; NARRABRI;

Lithology: Tuff , Andesite , Gabbro , Volcanic breccia , Basalt , Claystone , Mudstone , Sedimentary rock (unidentified) , Limestone , Agglomerate , Conglomerate , Clay , Rhyolite , Sandstone

Landform Pattern: Hills

Landform Element: Footslope , Hillslope , Valley flat

Emergent species: None

Upper Stratum Species: Eucalyptus crebra; Eucalyptus albens; Callitris glaucophylla; Eucalyptus melanophloia; Eucalyptus dealbata; Brachychiton populneus subsp. populneus; Alstonia constricta;

Mid Stratum Species: Beyeria viscosa; Olearia elliptica; Notelaea microcarpa var. microcarpa; Dodonaea viscosa subsp. angustifolia; Acacia leiocalyx subsp. leiocalyx; Breynia cernua; Solanum parvifolium; Melichrus urceolatus; Pimelea neo-anglica; Spartothamnella juncea; Psydrax oleifolia; Psydrax odorata; Maytenus cunninghamii; Cassinia laevis; Leptospermum microcarpum; Acacia deanei subsp. deanei; Clematis microphylla var. leptophylla; Marsdenia viridiflora subsp. viridiflora;

Ground Stratum Species: Austrostipa scabra subsp. scabra; Cymbopogon refractus; Desmodium brachypodum; Brunoniella australis; Dichondra sp. A; Cheilanthes sieberi subsp. sieberi; Calotis anthemoides; Austrodanthonia racemosa var. obtusata; Microlaena stipoides var. stipoides; Aristida ramosa; Cyperus gracilis; Aristida vagans; Notodanthonia longifolia; Vernonia cinerea var. cinerea; Arthropodium sp. B; Poa sieberiana; Aristida caput-medusae; Hypericum gramineum; Lomandra filiformis subsp. coriacea; Cheilanthes distans; Sigesbeckia australiensis; Sporobolus creber; Enneapogon gracilis; Leptochloa decipiens subsp. asthenes; Goodenia ovata; Glycine clandestina; Desmodium varians; Ajuga australis;

Diagnostic Species: Not Assessed

Fire Regime: No two fires within 15-20 year period, maintain most areas 30-50 years period (Hunter 2008g, Hunter 2008a). Occasional intervals greater than 25 years may be desirable (Kenny et al. 2003).

TEC Assessed: No associated TEC

TEC List: Not Assessed

Associated TEC Comments:

PCT Percent Cleared: 52.00

PCT Definition Status: Approved

BioNet Vegetation Classification - Community Profile Report

Plant Community Type ID (PCT ID): 101

PCT Name: Poplar Box - Yellow Box - Western Grey Box grassy woodland on cracking clay soils mainly in the Liverpool Plains, Brigalow Belt South Bioregion

Classification Confidence Level: 2-High

Vegetation Description: Tall woodland or open woodland dominated by Poplar Box (Eucalyptus populnea subsp. bimbil) sometimes with Yellow Box (Eucalyptus melliodora), White Cypress Pine (Callitris glaucophylla), Silver-leaved Ironbark (Eucalyptus melanophloia) or rarely with Western Grey Box (Eucalyptus microcarpa). A very sparse shrub layer may be present or it is absent. Shrub species include Wilga (Geijera parviflora), Mock Olive (Notalea microcarpa), the bluebush Maireana microphylla, Wild Orange (Capparis mitchellii) and Western Rosewood (Alectryon oleifolius). The ground cover is usually dense and is dominated by a rich array of grass and forb species. Grass species include Austrostipa verticillata, Queensland Bluegrass (Dichanthium sericeum subsp. sericeum), Bothriochloa decipiens, Austrodanthonia bipartita, Enteropogon acicularis, Aristida personata, Aristida ramosa, Austrostipa aristiglumis, Austrostipa scabra subsp. scabra, Themeda australis, Eulalia aurea, Paspalidium jubiflorum, Chloris truncata and Chloris ventricosa. The more palatable grasses such as Themeda australis and Eulalia fulva have often been grazed out. Forb species include Rumex brownii, Einadia nutans, Cotula australis, Maireana enchylaenoides, Erodium crinitum, Calotis lappulacea, Rostellularia adscendens subsp.adscendens, Sida corrugata, Oxalis exilis, Einadia hastata, Vittadinia dissecta var. hirta, Vittadinia muelleri, Vittadinia sulcata, Chrysocephalum apiculatum, Solanum cinereum, Abutilon oxycarpum, Dichondra sp. A, Wahlenbergia stricta subsp. stricta, Pycnosorus globosus, Goodenia fascicularis and Brunoniella australis. Occurs on alluvial cracking clay soils derived from volcanic or sedimentary substrates on alluvial plains or gently undulating slopes in the Brigalow Belt South Bioregion particularly in the Liverpool Plains sub-region with areas also occurring in the Northern Basalts sub-region. Mostly cleared for grazing and cropping. Weed species may be abundant and include Rapistrum rugosum, Medicago polymorpha, Lepidium africanum, Avena ludoviciana, Malva parviflora, Hedypnois rhagadioloides and Sisymbrium irio. Grades into grasslands on black earth soils (IDs 52 & 102) and upslope on hillsides into grassy White Box (Eucalyptus albens) - White Cypress Pine woodland (ID433, ID434, ID435). Mostly cleared, with few large remnants remaining and small remnants occurring on roadsides or on private land. Part of the extent listed as an endangered ecological community under the TSC Act covering vegetation on cracking clays in the Liverpool Plains sub-region. Very poorly protected.

Variation and Natural Disturbance: The understorey grass species vary with soil types grading into grassland on heavier soils.

Vegetation Formation: Semi-arid Woodlands (Grassy sub-formation);

Vegetation Class: Brigalow Clay Plain Woodlands;

IBRA Bioregion(s): Brigalow Belt South; Nandewar;

IBRA Sub-region(s): Liverpool Plains; Northern Basalts; Northern Outwash; Pilliga; Kaputar; Peel;

LGA: LIVERPOOL PLAINS; GUNNEDAH; GWYDIR; WARRUMBUNGLE;

Lithology: Alluvial loams and clays , Clay , Sedimentary rock (unidentified)

Landform Pattern: Alluvial plain , Low hills , Plain

Landform Element: Footslope , Plain , Valley flat

Emergent species: None

Upper Stratum Species: Eucalyptus populnea subsp. bimbil; Callitris glaucophylla; Eucalyptus melliodora; Eucalyptus microcarpa; Eucalyptus melanophloia; Eucalyptus pilligaensis; Callitris glaucophylla; Casuarina cristata;

Mid Stratum Species: Geijera parviflora; Maireana microphylla; Eremophila debilis; Alectryon oleifolius subsp. elongatus; Capparis mitchellii; Notelaea microcarpa; Sclerolaena muricata; Myoporum montanum; Pimelea neo-anglica; Sclerolaena birchii; Templetonia stenophylla;

Ground Stratum Species: Aristida personata; Oxalis perennans; Einadia nutans subsp. nutans; Brunoniella australis; Austrodanthonia bipartita; Austrostipa aristiglumis; Austrostipa verticillata; Aristida ramosa; Dichanthium sericeum subsp. sericeum; Bothriochloa decipiens; Chloris truncata; Austrodanthonia caespitosa; Austrostipa scabra subsp. scabra; Themeda australis; Eulalia aurea; Chloris ventricosa; Enteropogon acicularis; Eriochloa pseudoacrotricha; Austrostipa setacea; Digitaria divaricatissima; Enneapogon gracilis; Leptochloa decipiens subsp. asthenes; Sporobolus caroli; Sporobolus creber; Cymbopogon refractus; Austrodanthonia fulva; Rumex brownii; Vittadinia cuneata; Sida trichopoda; Solanum parvifolium; Wahlenbergia stricta subsp. stricta; Pycnosorus globosus; Goodenia fascicularis; Leiocarpa tomentosa; Cyperus gracilis; Carex inversa; Boerhavia dominii; Dichondra sp. A; Cotula australis; Maireana enchylaenoides; Erodium crinitum; Calotis lappulacea; Oxalis exilis; Einadia trigonos subsp. trigonos; Vittadinia dissecta var. hirta; Vittadinia muelleri; Vittadinia sulcata; Atriplex semibaccata; Plantago debilis; Goodenia heteromera; Sida spinosa; Chrysocephalum apiculatum; Desmodium varians; Goodenia bellidifolia subsp. bellidifolia; Calotis scabiosifolia var. scabiosifolia; Rostellularia adscendens var. adscendens; Sida corrugata; Paspalidium jubiflorum; Einadia hastata;

Diagnostic Species: Not Assessed

Fire Regime: Fire is now rare due to fragmentation. May have been patch burnt by Aboriginal people before European settlement.

TEC Assessed: Has associated TEC

TEC List: Listed BC Act,E: Brigalow within the Brigalow Belt South, Nandewar and Darling Riverine Plains Bioregions (Part); Listed BC Act,E: Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions (Part); Listed EPBC Act,CE: White Box Yellow Box Blakely's Red Gum Woodland (Part);

Associated TEC Comments:

PCT Percent Cleared: 75.00

REFERENCES

Lundney, D., Crowther, M. S., Wallis, I., Foley, W. J., Lemon, J., Wheeler, R., Madani, G., Orscheg, C., Griffith, J. E., Krockenberger, M., Retamales, M. and Stalenberg, E., January 2012, *Koalas and climate change: a case study on the Liverpool Plains, north-west New South Wales.* Available at: https://www.researchgate.net/publication/52005008_Koalas_and_climate_change_a_case_study_on_the_Liverpool_Plains_north-west_NSW?enrichId=rgreq-e06b01ed68cfa4b0955230651738f4ad-XXX&enrichSource=Y292ZXJQYWdlOzUyMDA1MDA4O0FTOjEwMjc2MjA5MjE3MTI3NkAxNDAxNTExODAxNzI5&el=1_x_2&_esc=publicationCoverPdf

Central Mapping Authority of New South Wales, 1981, *Topographic Map Series 1:25,000: Gunnedah 8935-I-N,* The Department, Bathurst.

Department of Lands, *Spatial Information Exchange,* Available at [https://six.maps.nsw.gov.au/wps/portal/]. Abbreviated as DL SIX

Gunnedah Shire Council, 2012, *Gunnedah Development Control Plan 2012,* Gunnedah Shire Council

Gunnedah Shire Council, 21 October 2015, *Gunnedah Koala Strategy,* Gunnedah Shire Council

New South Wales Government, *Gunnedah Local Environmental Plan 2012,* Available at [http://www.legislation.nsw.gov.au]

NSW Office of Environment and Heritage (NSW OEH), 2011, *Soil and Land Resources of the Liverpool Plains Catchment interactive DVD.* The Department.

Department of Environment and Climate Change NSW (DECC) 2008. The Approved Recovery Plan for the Koala.

Environmental Trust (2011), Environmental Trust (Restoration) August 2011, Restoring Koala habitat in Gunnedah: Building on a 1990 success.

Keith Mills and Associates, October 2007, *Koala Plan of Management for Sunnyside Coal Project via Gunnedah.*

Smith, M. 1992. Koalas and Land Use in Gunnedah Shire: A Report on the Bearcare Project. NSW National Parks & Wildlife Service, Hurstville

Crowther, M.S., D. Lunney, J. Lemon, R. Wheeler & G. Madani (2010). Restoration of koala habitat in Gunnedah II: movement of koalas across a patchy rural landscape. In: Australian Mammal Society 56th Meeting. Canberra, ACT.

JML Environmental Consultants Pty Ltd (Lemon, J.), 2017 (unpublished), *Recent Research undertaken in the Gunnedah Basin and the potential implications for the Koala survey undertaken by Kathryn Yigman of Stewart Surveys for J & R Hockey. Proposed Dwelling, 298 Clift Road, Spring Ridge NSW 2343.*

Queensland Government, December 2009, *Koala Safety Fencing and Measures Guideline: A guideline for the draft South East Queensland Koala Conservation State Planning Regulatory Provisions,* The department.

NSW Department of Planning, Industry and Environment, *Bionet Vegetation Classifications*, Available at: https://www.environment.nsw.gov.au/research/Visclassification.htm

Bureau of Meteorology, Daily Rainfall Gunnedah Airport AWS, Available At: http://www.bom.gov.au/jsp/ncc/cdio/weatherData/av?p_display_type=dailyDataFile&p_nccObsCode=136&p_stn_num=055202&p_c=-609651661&p_startYear=2020

NSW Legislation, 16 October 2020, State Environmental Planning Policy (Koala Habitat Protection) 2019, NSW Legislation, Available at https://www.legislation.nsw.gov.au/view/html/inforce/current/epi-2019-0658#statusinformation

NSW Department of Planning, Industry and Environment, October 2020, Koala Habitat Protection Guideline, Implementing State Environmental Planning Policy (Koala Habitat Protection), 2019. The Department.

QLD Government, 2019, Koala-sensitive Design Guideline: A guide to koala-sensitive design measures for planning and development activities, available at https://environment.des.qld.gov.au/__data/assets/pdf_file/0025/102859/koala-sensitive-design-guideline.pdf

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