



AEP

ECOLOGY | BIOBANKING | OFFSETS | BUSHFIRE

ECOLOGICAL ASSESSMENT REPORT

FOR

PROPOSED CHILDCARE CENTRE

AT

**110 – 112 MOUNT VERNON ROAD, MOUNT
VERNON, NSW**

Prepared for: Key Business Accountants

**Rev: 1
15 April 2020**

AEP Ref: 2091



EXECUTIVE SUMMARY

Anderson Environment & Planning (AEP) was commissioned by Key Business Accountants (the client) to undertake field investigations and reporting to prepare an Ecological Assessment Report (EAR) as part of a development application for a proposed childcare centre development at 110-112 Mount Vernon Road, located within Lot 4 DP 865818.

The Subject Site, encompassing the entirety of the lot, is approx. 1.03ha consisting of exotic grassland. The land on which the development is proposed is zoned E4 – Environmental Living.

The site primarily contains a mix of exotic grasses and herbs, with native vegetation limited to sporadic ground cover. It is assumed that the vegetation may have formed part of Cumberland Shale Hill Woodland Ecological Endangered Community (EEC) (CSHW). The observed grasslands on site are dominated by exotics and lack the structure, composition and diagnostic species of the CSHW and as such do not meet the criteria of this community.

Assessment under the State Environmental Planning Policy (Koala Habitat Protection) 2019, (SEPP Koala) showed the site was not mapped and as such no further provision of the policy would apply to the site.

Ground truthing during the site inspection, combined with fauna and flora surveys, found that the proposal is not likely to cause any significant impact with reference to Section 7.3 of the Biodiversity Conservation Act (2016) and that considerations towards the Biodiversity Assessment Method (BAM) and Biodiversity Offset Scheme (BOS) will not be required.



Contents

1.0	Introduction.....	1
2.0	Site Particulars	2
3.0	Proposed Development.....	3
4.0	Scope and Purpose.....	6
5.0	Study Certification and Licencing.....	9
6.0	Methods.....	10
6.1	Literature Review.....	10
6.2	Field Survey	11
7.0	Results.....	15
7.1	Database Searches.....	15
7.2	Vegetation Communities	20
7.3	Flora	20
7.4	Threatened plants	20
7.5	Habitat Assessment	20
7.6	Fauna	20
8.0	SEPP (Koala Habitat Protection) 2019 Assessment.....	22
9.0	EPBC Act Assessment	23
10.0	Recommendations	24
11.0	References	25



Tables

Table 1 - Area Clearing Thresholds (BC Act).....	7
Table 2 – Field Survey Effort.....	13
Table 3 – Threatened Species Appraisal	16

Figures

Figure 1 – Subject Site.....	4
Figure 2 – Development Plan.....	5
Figure 3 – Biodiversity Values Map (Sourced Department of Finances, Services and Innovation, 2018).....	7
Figure 4 – Survey Effort	14
Figure 5 – Vegetation and Habitat Features	21

Appendices

- Appendix A – Flora Species List & BAM Plot Data
- Appendix B – Expected Fauna Species List
- Appendix C – Site Photographs
- Appendix D – Author CVs



1.0 Introduction

Anderson Environment & Planning (AEP) was commissioned by Key Business Accountants (*the client*) to undertake field investigations and reporting to prepare an Ecological Assessment Report (EAR) as part of a development application for a proposed childcare centre development at 110-112 Mount Vernon Road, located within Lot 4 DP 865818 (refer **Figure 1**).

The Subject Site is approx. 1.03ha consisting of exotic grassland. The land on which the development is proposed is zoned E4 – Environmental Living.

This EAR is specifically intended to indicate the likelihood of the proposed works having a significant effect on threatened species, populations or flora assemblages considered to constitute an Endangered Ecological Community (EEC). In this regard, the report aims to recognise the relevant requirements of the *Environmental Planning and Assessment Act 1979* (EPA Act), the *Biodiversity Conservation Act 2016* (the BC Act) and the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The purpose of this EAR is to:

- Describe ecological values of the site;
- Explore the potential for threatened species to utilise the site;
- Assess ecological impacts associated with the proposal against relevant legislation; and
- Recommend actions to mitigate deleterious environmental effects of the project.

Potential ecological impacts on native species in general are also considered, as are recommendations for minimising and mitigating environmental impacts potentially arising from the proposal.

For the purposes of referencing, this document should be referred to as:

Anderson Environment & Planning (2020). *Ecological Assessment Report for Proposed Childcare Centre Development at Mount Vernon, NSW*. Unpublished report for Key Business Accountants.



2.0 Site Particulars

- **Location** – 110-112 Mount Vernon Road, Mount Vernon, NSW.
- **Local Government Area (LGA)** – City of Penrith LGA.
- **Title** – The proposed development is situated within Lot 1 DP 865818.
- **Subject Site** – The Subject site encompasses the entirety of the lot, approx. 1.03ha.
- **Zoning** – Development is proposed within land zoned E4 – Environmental Living.
- **Current Land Use** – The site is entirely cleared, consisting of exotic grassland.
- **Surrounding Land Use** – The site is surrounded on all sides by low density residential and semi-rural lots, containing dwellings and occasional scattered paddock trees. Kemps Creek is located approximately 2km to the west. The surrounding land is zoned E4 – Environmental Living.



3.0 Proposed Development

The proponent is seeking development consent to undertake a proposed Childcare Centre and associated civil works at the Subject Site. The land subject to the development is zoned E4 – Environmental Living. The proposed development and associated works are proposed to cover the majority of the 1.03ha lot, including access and parking, structures, landscaping, and wastewater treatment adsorption beds.

Figure 2 shows the proposed development layout.

Disclaimer: While all reasonable care has been taken to ensure the information shown on this map is up to date and accurate, no guarantee is given that the information portrayed is free from error or omission. Please verify the accuracy of all information prior to use.

Legend

 Lot Boundary



0 25 50 75 100 125 m



Note:

- 1. Boundaries are not survey accurate
- 2. Do not scale off the plan



AEP

Title: Figure 1 - Subject Site Date: April 2020

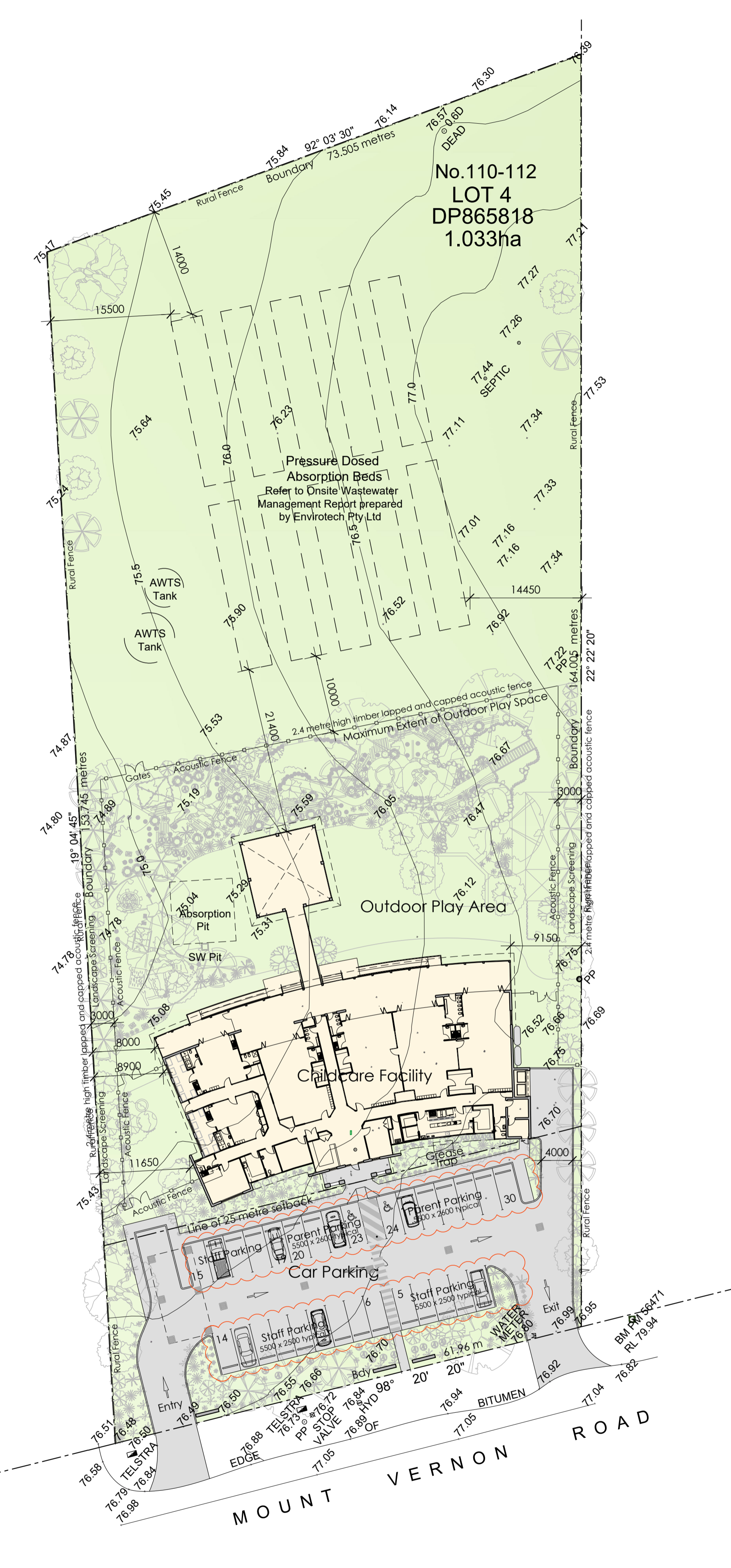
Location: 110-112 Mount Vernon Road, Mount Vernon NSW

Client: Key Business Accountants

AEP ref: 2091

ABBREVIATIONS

Abbr.	Description
B.01	Colorbond Metal Barge Board
BS.01	Stainless steel baby bath
BSS	Electrical Baby Bottle Sanitiser
BAL.01	Select Glazed Balustrade
BC.01	Zincalume Box Gutter
BSN.01	Select Wall Basin
BSN.02	Select Wall Basin
BSN.03	Select Wall Basin
BSN.04	Hands Free Wall Basin
CON.01	Concrete driveway
CPD	Cupboard with benchtop
CRP.01	Cool Room Wall Panel
DK.01	*Modwood Eco Decking
F.01	Colorbond Metal Fascia
FC.01	Paint Finish to FC Cladding
FCE.01	Decorative Timber Fence
FF.01	Select Vinyl Floor Coverings
FF.02	Select Carpet Floor Coverings
FF.03	Select Floor Tiles
FF.04	Select Floor Tiles
FF.05	Select Vinyl Floor Coverings
FF.06	Select Floor Tiles
FF.07	Select Carpet Floor Coverings
FF.08	Select Vinyl Floor Coverings
FF.09	Select Carpet Floor Coverings
FF.10	Select Vinyl Floor Coverings
FF.11	Select Floor Tiles
FF.12	Select Vinyl Floor Coverings
FF.13	Select Vinyl Floor Coverings
FF.14	Select Vinyl Floor Coverings
FF.15	Select Vinyl Floor Coverings
FF.16	Select Vinyl Floor Coverings
FF.17	Select Vinyl Floor Coverings
FF.18	Select Epoxy Floor Sealer
G.01	Colorbond Metal Gutter
HR.01	Powdercoated Aluminium Handrail
LV.01	Powdercoated Aluminium Louvres
OHC	Overhead cupboard
PC.01	Colorbond Metal Parapet Capping
PP.01	Laminate Toilet Partitions
PP.02	Laminate Toilet Partitions
PRP.01	Acrotex finish to Hebel Power Panel
PWP	Existing power pole
R.01	Colorbond Metal Roof
RC.01	Colorbond metal ridge capping
RS.01	Colorbond roller shutter
SCN.01	*Modwood Eco Decking Screen
SH.01	Free standing metal shelves
SL.01	Alum Framed Glass Skylight
SLH.01	Slop Hopper
SSS.01	Stainless Steel Sink
SSS.02	Stainless Steel Sink
STC.01	Stone Cladding
TBR.01	*Weathergroove cladding
TGSI	Tactile Ground Surface Indicator
TP.01	Merbau timber cladding to post
TUB.01	Stainless Steel inset tub
VB.01	Accessible Vanity Basin
VB.02	Vanity Basin
WC.01	Junior Toilet Suite
WC.02	Toilet Suite
WC.03	Accessible Toilet Suite
WM	Washing machine space
WST.01	Stainless Steel Wash Trough



SITE PLAN
SCALE 1: 400



PART SITE PLAN
SCALE 1: 200

SITE STATISTICS

Site Zoning -	E4 - Environmental Living	
Total Site Area.	10,330 sqm - 1.033 Ha	
Build Upon Area		
Ground Floor Level	798.0 sqm	
Verandah	207.8 sqm	
Gazebo & Boardwalk	128.7 sqm	
Paving and Driveway	1058.0 sqm	
Total Built Upon Area	2192.5 sqm	
Planning Parameters		
Landscaped Area	8090.0 sqm	
Total Site Coverage	1182.0 sqm	
Item	Required	Provided
Site Coverage	11.4 %	
Gross Floor Area (Previously approved)	600sqm	751.5sqm (891.6sqm)
Floor Space Ratio	N/A	0.0727 : 1
Soft Landscaping		78.3%
Parking		
Parent Car Spaces (Spaces 20-30)	10	11
Staff Car Spaces (Spaces 1-19)	19	19
Total Spaces	29	30

PLAY SPACE AREAS

Indoor Space	Unencumbered Area	No. of Children
Room 1	27.0sqm	8
Room 2	32.2sqm	8
Room 3	65.2sqm	20
Room 4	75.0sqm	20
Room 5	72.0sqm	20
Room 6	72.6sqm	20
Total	344.0sqm	96
Outdoor Space		
Baby Play Area	130.0sqm	Refer
Verandah	207.0 sqm	to
Gazebo and Boardwalk	128.0 sqm	P.O.M.
General Play Area	1795.0sqm	
Total	1316.0sqm	

P.O.M. = Plan of Management

AMENDMENTS

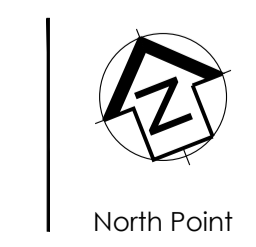
Issue	Description	Date	By
A	Carpark layout amended	10.03.20	GM
	Parking table updated		



Project Works Design Pty Ltd
 ABN 97 108 707 482
 c/- p.o. box 5138
 chittaway bay nsw 2261
 p. 0412 637 875
 admin@pwwdesign.com.au
 www.pwwdesign.com.au

©Copyright
 This drawing is Copyright and is the property of Project Works Design Pty Limited. It must not be copied or reproduced in any way without the written permission of Project Works Design Pty Limited

Vladimir Vanovac and Mark Toma
Proposed Childcare Centre
 110 - 112 Mount Vernon Road Mount Vernon NSW



Title: Proposed Site Plan
 Drawn: GM
 Date: 14.11.19
 Checked: GM
 Scale: 1: 500 / 1:200 @ A1
 Job No. 18307

Dwg No. **DA01**
 Issue: **A**

Development Application



4.0 Scope and Purpose

This report is specifically intended to indicate the likelihood of the proposal having a significant effect on threatened species or ecological communities. In this regard, the report aims to recognise the relevant requirements of the *Environmental Planning and Assessment Act 1979* (EP&A Act), the *Biodiversity Conservation Act 2016* (BC Act) and the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Consideration of other relevant environmental planning instruments such as State Environmental Planning Policies are also included.

Biodiversity Values Map

The Biodiversity Values Map (BV Map) identifies land with high biodiversity value, as defined by the Biodiversity Conservation Regulation 2017. The Biodiversity Offsets Scheme (BOS) applies to all local developments, major projects or the clearing of native vegetation where the State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017 applies. Any of these will require entry into the BOS if they occur on land mapped on the Biodiversity Values Map. Exempt and complying development or private native forestry are not subject to the Biodiversity Offsets Scheme.

The area affected by the proposed development is mapped on the BV Map and therefore at a desktop level this proposal triggers the BC Act and the requirement to apply the Biodiversity Assessment Methodology (BAM) in the form of a Biodiversity Development Assessment Report (BDAR) (refer **Figure 3**).

However, upon ground truthing as part of the site assessment, including undertaking a BAM plot in accordance with Section 5.3 of the BAM, it was observed that native vegetation is almost entirely absent on site. The resulting vegetation integrity score for the site was calculated at 1.7, as such no further assessment is required under the BAM and BOS in accordance with Section 3.1 of the BAM. Therefore, a Biodiversity Development Assessment Report (BDAR) is not required.

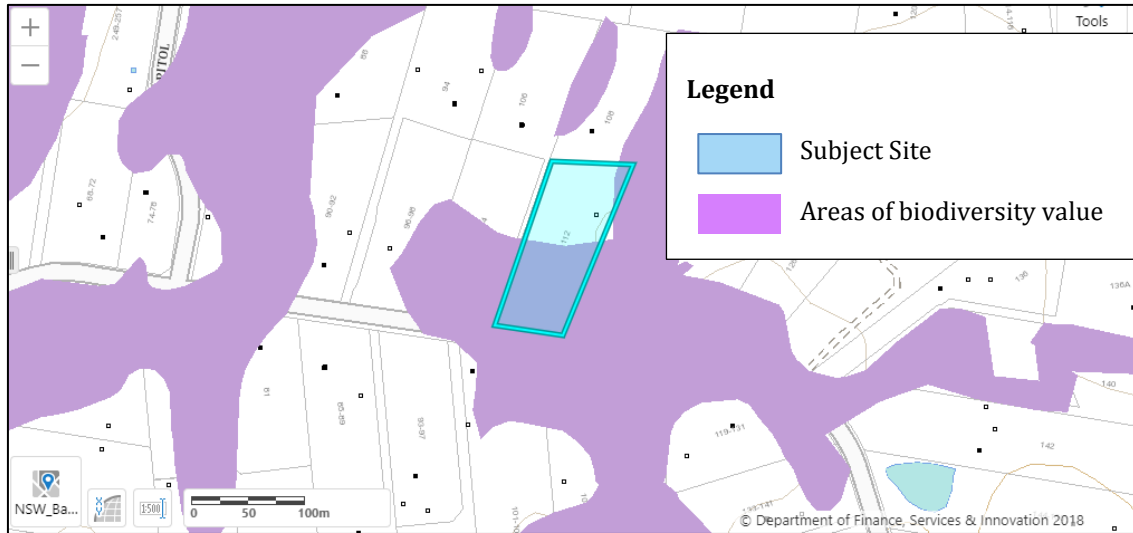


Figure 3 – Biodiversity Values Map (Sourced Department of Finances, Services and Innovation, 2018).

Area Clearing Threshold

“The area threshold varies depending on the minimum lot size (shown in the Lot Size Maps made under the relevant Local Environmental Plan (LEP)), or actual lot size (where there is no minimum lot size provided for the relevant land under the LEP). The area threshold applies to all proposed native vegetation clearing associated with a development proposal”.

Table 1 - Area Clearing Thresholds (BC Act)

Minimum lot size	Threshold for clearing, above which the BAM and offsets scheme apply
< 1ha	>0.25ha
1ha to <40ha	>0.5ha.
40ha to <1000ha	>1.0ha
>1000ha	>2ha

For the subject site, the minimum lot size is 1ha. As mentioned above, no native vegetation is present on site that would trigger the clearing threshold. Therefore, a BDAR was considered unnecessary to accompany this report against these criteria.



Test of Significance

Literature searches and site investigations were performed to gather information to address Section 7.3 of the BC Act and to satisfy the requirements of The *Threatened Species Survey and Assessment Guidelines for Developments and Activities* (working draft), NSW Department of Environment and Conservation (2004). Also afforded consideration was the Commonwealth *Environment Protection & Biodiversity Conservation Act 1999* (EPBC Act).

This EAR has been informed by background research, literature review, database searches, consultation, targeted ecological fieldwork, mapping, detailed habitat assessment, historical site knowledge and ultimately, impact assessment consideration against the type and form of the proposal.

Survey design, impact assessment and consideration of recommendations were undertaken with due reference to the above legislation and the following relevant guidelines:

- NSW Department of Environment and Conservation. *Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities: Working Draft*, (2004);
- NSW Department of Environment and Climate Change - *Threatened Species Test of Significance Guidelines* (2018); and
- NSW Office of Environment and Heritage - *NSW Guide to Surveying Threatened Plants* (2016).

Specifically, the scope of this study is to:

- Identify vascular plant species occurring within the subject site, including any threatened species listed under the BC Act or EPBC Act;
- Identify and map the extent of vegetation communities within the subject site, including listed Endangered Ecological Communities (EECs);
- Identify any fauna species, including threatened and migratory species, and populations or their habitats, which occur within the site and/or are known to occur in the wider locality;
- Assess the potential for the proposal to have a significant impact on any threatened species, populations or EEC (or their habitats) identified within the subject site; and
- Recommend measures to be implemented to identify, minimise, mitigate and ameliorate potential environmental impacts of the proposal.

In addition to the survey works conducted within the subject site, consideration has been afforded to the wider locality utilising database searches within 10km of the site and assessment of habitat that may be ecologically linked to the subject site.



5.0 Study Certification and Licencing

Fieldwork and reporting was undertaken by Tim Mouton BEnvSc MEnvSc, Warwick Muir BSc and reviewed by Natalie Black BSc (HONS, Masters Planning & Cert IV TA) of Anderson Environment & Planning.

Research was conducted under the following licences:

- NSW National Parks and Wildlife Service Scientific Investigation Licence SL101313;
- Animal Research Authority (Trim File No: 14/600(2)) issued by NSW Agriculture; and
- Animal Care and Ethics Committee Certificate of Approval (Trim File No: 14/600(2)) issued by NSW Agriculture.

Certification:

As the principal author, I, Tim Mouton, make the following certification:

- The results presented in the report are, in the opinion of the principal author and certifier, a true and accurate account of the species recorded, or considered likely to occur within the subject site;
- Commonwealth, state and local government policies and guidelines formed the basis of project surveying methodology, unless specified departures from industry standard guidelines are justified for scientific and/or animal ethics reasons; and
- All research workers have complied with relevant laws and codes relating to the conduct of flora and fauna research, including the Animal Research Act 1995, BC Act and the Australian Code of Practice for the Care and Use of Animals for Scientific Purposes.

Principal Author and Certifier:

Tim Mouton

Senior Ecologist

Anderson Environment & Planning

Biodiversity Accredited Assessor BAAS: 19083

15 April 2020



6.0 Methods

The field surveys for the subject area have been prepared and performed with due recognition of the instruments previously discussed.

The size of the subject site, the type and status of native vegetation and habitats remaining, the status of existing and proposed surrounding land use, and the level and type of habitat linkages to other proximate bushland areas were all considered in formulating the methodology employed and described below.

The assessment approach was tailored to undertake sufficient works relating to threatened species, and native species in general, to ensure that legislative requirements were met for the proposal.

To ensure a robust impact assessment approach, where any potential doubt remained over species impact, presence within the Subject Site was assumed to ensure an overly conservative approach was employed.

6.1 Literature Review

Primary information sources reviewed included:

- Aerial Photograph Interpretation (API) of the site and surrounding locality;
- Remnant Vegetation of the western Cumberland subregion, 2013 Update;
- NSW Office of Environment & Heritage (OEH) Threatened Species, Populations and Ecological Communities website;
- OEH Threatened Species, Populations and Ecological Communities website (<https://www.environment.nsw.gov.au/topics/animals-and-plants/threatened-species>);
- Collective knowledge gained from previous ecological survey and assessment in the Cumberland region over more than 20 years; and
- Anecdotal records.

In addition, database searches were carried out, namely:

- Review of flora and fauna records held by the NSW Office of Environment & Heritage (OEH) Atlas of NSW Wildlife within a 10km radius of the site (February 2020); and
- Review of flora and fauna records held by the Commonwealth Department of Environment (DoE) Protected Matters Search within a 5km radius of the site (February 2020).



- Note that any records considered erroneous, historic (records before 1998), or obviously of no relevance to the site in regards to habitat (e.g. seabirds, marine species etc.) have been omitted.

6.2 Field Survey

6.2.1 Vegetation Communities

Vegetation was surveyed utilising a variety of methods, as outlined below:

- Review of the Remnant Vegetation of the western Cumberland subregion (2013 Update) Mapping;
- Consultation of 1:25,000 topographic map series for the area; and
- Subject site inspection to ground truth the unit(s) identified by API.

The final derived vegetation map was based on dominant species present in the over-storey, shrub and ground layers. Vegetation community names were derived from the closest fitting map unit description and variations were identified where necessary. The dominant species composition, structural and physical attributes were all considered when assigning the best fit community type.

Consideration was given to the potential for derived vegetation community(s) to constitute EEC, as listed under the BC Act and/or EPBC Act. Subject Site floristic composition, geomorphological characteristics and geographical extent were considered in this process.

6.2.2 Flora

A general flora survey was undertaken to produce a flora species list for the subject site, to search specifically for threatened flora species known from the wider area, and to gather data necessary to both derive vegetation community type and to meet the survey guidelines of relevant authorities. Survey works included:

- Identification of all vascular plant species encountered during fieldwork. Parallel Field Traverse Technique (Cropper 1993) within the Subject Site was utilised to maximise species encountered. A full list of all flora species recorded during fieldwork is included as **Appendix A**.
- Targeted searches for threatened flora species, identified in database searches, were undertaken in areas of potentially suitable habitat.

The disturbed open nature of the subject site permitted this methodology to achieve adequate coverage of the flora therein.

A vegetation survey plot was also undertaken in accordance with the BAM, to assess the presence and condition of any native vegetation present, and to determine a likely Plant Community Type (PCT).



6.2.3 Habitat

An assessment of the relative habitat values present within the site was carried out. This assessment focused primarily on the identification of specific habitat types and resources favoured by known threatened species from the region. The assessment also considered the potential value of the Subject Site (and surrounding areas) for all major guilds of native flora and fauna.

The assessment was based on the specific habitat requirements of each threatened fauna species in regards to home range, feeding, roosting, breeding, movement patterns and corridor requirements. Consideration was given to contributing factors including topography, soil, light and hydrology for threatened flora and assemblages.

In particular, focus was put on documenting the presence of key habitat features such as tree hollows. Hollows are an important resource utilised by a variety of forest fauna, and are particularly relevant for several of the likely key threatened species in this locality. Vertebrate and invertebrate species use hollows as diurnal or nocturnal shelter sites, for rearing young, feeding, thermoregulation, and to facilitate ranging behaviour and dispersal.

HBTs were recorded and mapped within the Subject Site utilising the methodology of tree hollow identification set by OEH in the BioBanking field plot methodology (2009), namely:

“A hollow is only recorded if: (a) the entrance can be seen; (b) the minimum entrance width is at least 5 cm across; (c) the hollow appears to have depth (i.e. you cannot see solid wood beyond the entrance); and (d) the hollow is at least 1 m above the ground (this omits hollows in cut stumps or at the base of trees)”.

Other important habitat elements for the site have been considered, which are provided in further Sections.

6.2.4 Fauna

Adequate fauna survey effort for the Subject Site was covered by targeted, incidental and opportunistic records of fauna species during fieldwork including:

- Avifauna surveys. Birds were identified by direct observation, by recognition of calls, any sightings of secondary distinctive features such as nests, feathers etc. during fieldwork;
- Records of fauna species observed during targeted searches and fieldwork were noted. This included searches for secondary indications (scratches, scats, diggings, tracks etc.) that may indicate subject site usage by resident or migratory species. Observation was conducted for whitewash, regurgitation pellets and prey remains from forest owls, chewed capsules / cones and fruit remains from birds, koala scats etc;



6.2.5 Survey Dates, Times & Activity

Table 2 – Field Survey Effort

Date	Time	Activity	No. of Persons on Site
31/03/2020	10:00 – 14:30	Site reconnaissance, BAM plot, general observations.	1





The above survey methodology is considered to provide sufficient understanding of the biodiversity of the subject site and wider Subject Site given the disturbed nature of the vegetation assemblages therein.

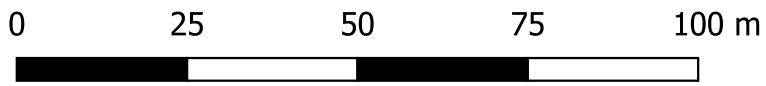
In addition, by applying rigorous habitat assessment to more mobile species with OEH Atlas records within the locality, it was ensured that all possible uses of the subject site and wider Subject Site by notable species were considered, and hence accommodated within subsequent biodiversity assessment and management recommendations.

A summary of the field survey effort is shown in **Figure 4** below.

Disclaimer: While all reasonable care has been taken to ensure the information shown on this map is up to date and accurate, no guarantee is given that the information portrayed is free from error or omission. Please verify the accuracy of all information prior to use.

Legend

-  BAM End
-  BAM Start
-  Flora Survey
-  Subject Site



Note:
1. Boundaries are not survey accurate
2. Do not scale off the plan



AEP

Title: Figure 4 - Survey Effort Date: April 2020

Location: 110-112 Mount Vernon Road, Mount Vernon NSW

Client: Key Business Accountants

AEP ref: 2091



7.0 Results

7.1 Database Searches

Searches were undertaken of databases within a 10km radius of the site as per latest OEH (BC Act listings) & Department of Environment and Energy (DoEE) (EPBC Act listings) (Table 3). Note that any records considered erroneous, historic only, or obviously of no relevance to the site in regards to habitat (e.g. seabirds, marine species etc.) have been omitted.

The potential for the listed threatened species to occur within the site is considered below.

Detailed ecological profile descriptions of species can be found at:

<https://www.environment.nsw.gov.au/topics/animals-and-plants/threatened-species>

Table 3 – Threatened Species Appraisal

Scientific Name	Common Name	TSC Act	EPBC Act	Chance of Occurrence / Comment
Plants				
<i>Eucalyptus benthamii</i> (34)	Camden White Gum	V	V	Not observed during surveys
<i>Marsdenia viridiflora</i> subsp. <i>viridiflora</i> (7)	Marsdenia viridiflora subsp. viridiflora population in the Bankstown, Camden, Campbelltown, Fairfield, Holroyd, Liverpool and Penrith local government areas	E		Not observed during surveys
<i>Pimelea spicata</i> (771)	Spiked Rice-flower	E	E	Not observed during surveys
<i>Pomaderris brunnea</i> (5)	Brown Pomaderris	E	V	Not observed during surveys
<i>Pultenaea pendunculata</i> (1)	Matted Bush-pea	E		Not observed during surveys
Birds				
<i>Anthochaera Phrygia</i> (1)	Regent Honeyeater	CE	CE	Not observed during surveys. No habitat present on site. It is considered unlikely to utilise habitat in the Subject Site.
<i>Artamus cyanopterus cyanopterus</i> (49)	Dusky Woodswallow	V		Not observed during surveys. No habitat present on site. It is considered unlikely to utilise habitat in the Subject Site.
<i>Calyptorhynchus lathami</i> (1)	Glossy Black-Cockatoo	V		Not observed during surveys. No habitat present on site. It is considered unlikely to utilise habitat in the Subject Site.

Scientific Name	Common Name	TSC Act	EPBC Act	Chance of Occurrence / Comment
<i>Chthonicola sagittata</i> (11)	Speckled Warbler	V		Not observed during surveys. No habitat present on site. It is considered unlikely to utilise habitat in the Subject Site.
<i>Climacteris picumnus victoriae</i> (1)	Brown Treecreeper (eastern subspecies)	V		Not observed during surveys. No habitat present on site. It is considered unlikely to utilise habitat in the Subject Site.
<i>Daphoenositta chrysoptera</i> (21)	Varied Sittella	V		Not observed during surveys. No habitat present on site. It is considered unlikely to utilise habitat in the Subject Site.
<i>Glossopsitta pusilla</i> (7)	Little Lorikeet	V		Not observed during surveys. No habitat present on site. It is considered unlikely to utilise habitat in the Subject Site.
<i>Hieraetus morphnoides</i> (1)	Little Eagle	V		Not observed during surveys. No habitat present on site. It is considered unlikely to utilise habitat in the Subject Site.
<i>Ixobrychus flavicollis</i> (1)	Australasian Bittern	E	E	Not observed during surveys. No habitat present on site. It is considered unlikely to utilise habitat in the Subject Site.
<i>Lathamus discolor</i> (114)	Swift Parrot	E	CE	Not observed during surveys. No habitat present on site. It is considered unlikely to utilise habitat in the Subject Site.
<i>Neophema pulchella</i> (1)	Turquoise Parrot	V		Not observed during surveys. No habitat present on site. It is considered unlikely to utilise habitat in the Subject Site.
<i>Ninox strenua</i> (2)	Powerful Owl	V		Not observed during surveys. No habitat present on site. It is considered unlikely to utilise habitat in the Subject Site.
<i>Petroica boodang</i> (1)	Scarlet Robin	V		Not observed during surveys. No habitat present on site. It is considered unlikely to utilise habitat in the Subject Site.

Scientific Name	Common Name	TSC Act	EPBC Act	Chance of Occurrence / Comment
<i>Stictonetta naevosa</i> (1)	Freckled Duck	V		Not observed during surveys. No habitat present on site. It is considered unlikely to utilise habitat in the Subject Site.
Mammals				
<i>Phascolarctos cinereus</i> (3)	Koala	V	V	No sign of the species on site during recent fieldwork. No preferred feed tree species present and lack of records of this species suggest locality use is not significant. Further consideration given under Section 8.0.
<i>Pteropus poliocephalus</i> (66)	Grey-headed Flying-fox	V	V	Not observed during surveys. No habitat present on site. It is considered unlikely to utilise habitat in the Subject Site.
<i>Micronomus norfolkensis</i> (20)	Eastern Coastal Freetail-bat	V		Not observed during surveys. No habitat present on site. It is considered unlikely to utilise habitat in the Subject Site.
<i>Chalinolobus dwyeri</i> (4)	Large-eared Pied Bat	V	V	Not observed during surveys. No habitat present on site. It is considered unlikely to utilise habitat in the Subject Site.
<i>Falsistrellus tasmaniensis</i> (2)	Eastern False Pipistrelle	V		Not observed during surveys. No habitat present on site. It is considered unlikely to utilise habitat in the Subject Site.
<i>Miniopterus australis</i> (21)	Little Bentwing-bat	V		Not observed during surveys. No habitat present on site. It is considered unlikely to utilise habitat in the Subject Site.
<i>Miniopterus orianae oceanensis</i> (26)	Eastern Bentwing-bat	V		Not observed during surveys. No habitat present on site. It is considered unlikely to utilise habitat in the Subject Site.
<i>Myotis macropus</i> (2)	Southern Myotis	V		Not observed during surveys. No habitat present on site. It is considered unlikely to utilise habitat in the Subject Site.

Scientific Name	Common Name	TSC Act	EPBC Act	Chance of Occurrence / Comment
<i>Scoteanax rueppellii</i> (9)	Greater Broad-nosed Bat	V		Not observed during surveys. No habitat present on site. It is considered unlikely to utilise habitat in the Subject Site.
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tailed Bat	V		Not observed during surveys. No habitat present on site. It is considered unlikely to utilise habitat in the Subject Site.
Gastropods				
<i>Meridolum corneovirens</i>	Cumberland Plain Land Snail	E		Not observed during surveys. No habitat present on site. It is considered unlikely to utilise habitat in the Subject Site.
Amphibians				
<i>Litoria aurea</i> (1)	Green and Golden Bell Frog	E	V	Not observed during surveys. No habitat present on site. It is considered unlikely to utilise habitat in the Subject Site.

Table Key - Status (BC Act & EPBC Act):

C: Listed on China Australia Migratory Bird Agreement, CE: Critically Endangered (EPBC Act & BC Act), E: Endangered (EPBC Act & BC Act), V: Vulnerable (EPBC Act & BC Act)
 (#) - Indicates number of Atlas Records within 10km of the subject site



From the above assessment in **Table 3**, it was determined that no threatened species are considered key subject species likely to occur on site and no preferred habitat for these species is present. As a result, the proposed development would not result in any actual or potential impacts on threatened species and the preparation of a 5-Part Test is not required.

7.2 Vegetation Communities

Regional vegetation mapping from 2013 shows the southern portion of the site mapped as Cumberland Shale Hills Woodland, which forms part of Cumberland Plains Woodland in the Sydney Basin Bioregion EEC. However, the site is highly disturbed and the vegetation present predominantly consists of exotic grassland, with scattered herbaceous weeds and garden escapes. The vegetation present does not meet any diagnostic criteria associated with the above threatened community, and is considered non-native.

Vegetation present on site has been mapped as exotic grassland (refer to **Figure 5**).

7.3 Flora

Flora surveys have resulted in the identification of approximately 51 species within the site. 66% of these species are exotic and 34% native. The presence of native species on site is very limited due to the level of disturbance and density of weeds. In addition to the general flora survey, one vegetation plot survey was undertaken to confirm the vegetation type present and integrity in accordance with the BAM. Even though a small proportion of native ground covers and regrowth are present on site, the results of the plot survey show that the structure and function of this vegetation is extremely low, resulting in a Vegetation Integrity (VI) score of 1.7. As a result, the assemblage of species present would not be considered part of any native vegetation community / PCT.

A full list of flora species identified by surveys conducted on the site is included in **Appendix A**.

Vegetation plot data is also included in **Appendix A**.

7.4 Threatened plants

No threatened flora species were recorded during the current fieldwork.

7.5 Habitat Assessment

The site is highly disturbed and does not contain any habitat features for native fauna.

7.6 Fauna

No fauna species were observed on site during the field survey.



Figure 5 – Vegetation and Habitat Features

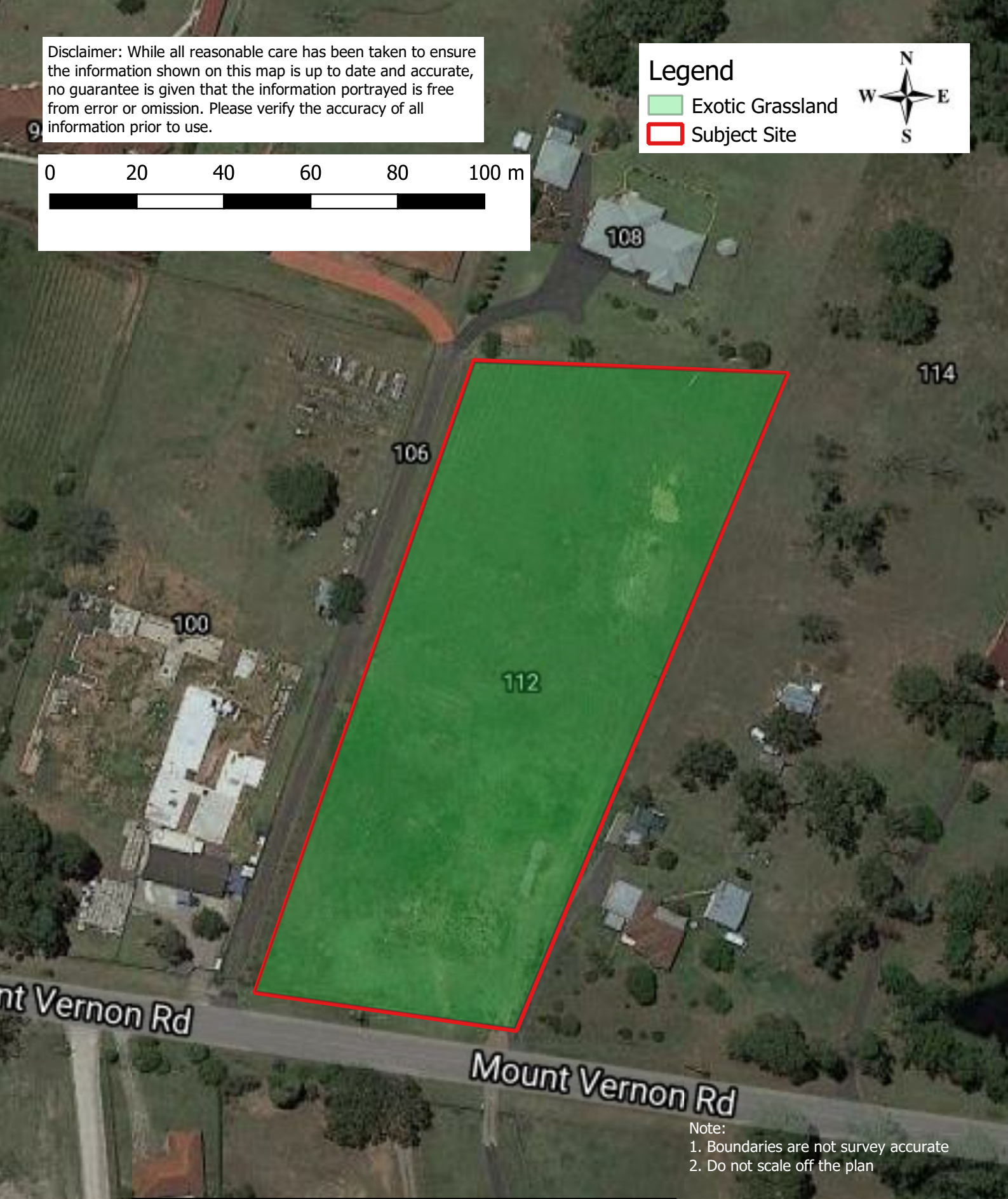
Disclaimer: While all reasonable care has been taken to ensure the information shown on this map is up to date and accurate, no guarantee is given that the information portrayed is free from error or omission. Please verify the accuracy of all information prior to use.

Legend

-  Exotic Grassland
-  Subject Site



0 20 40 60 80 100 m



- Note:
1. Boundaries are not survey accurate
 2. Do not scale off the plan



AEP

Title: Figure 3 - Vegetation mapping Date: April 2020

Location: 110-112 Mount Vernon Road, Mount Vernon NSW

Client: Key Business Accountants

AEP ref: 2091



8.0 SEPP (Koala Habitat Protection) 2019 Assessment

There is no recorded Koala Plan of Management (KPoM) covering the site and consequently the site is assessed under the draft State Environmental Planning Policy (Koala Habitat Protection) 2019.

Whilst the site is greater than 1ha in area, it is not located on the Koala Development application map and therefore no further consideration under the SEPP applies.

Furthermore, the SEPP does not apply to the City of Penrith LGA.



9.0 EPBC Act Assessment

A search was conducted in March 2019 of Matters of National Environmental Significance (MNES) as relevant to the *Environment Protection & Biodiversity Conservation Act 1999* (EPBC Act). The following MNES are considered in this assessment.

World Heritage Properties:

The site is not a World Heritage area, and is not in close proximity to any such area.

National Heritage Places:

The site is not a National Heritage place, and it is not in close proximity to any such places.

Wetlands of International Significance (declared Ramsar wetlands);

The site does not contain Ramsar Wetlands, and it is not in close proximity to any Ramsar Wetlands.

Great Barrier Reef Marine Park:

The site is not part of, or within close proximity to, the Great Barrier Reef Marine Park.

Commonwealth Marine Areas:

The site is not part of, or within close proximity to, any Commonwealth Marine Area.

Threatened Ecological Communities:

While five Threatened Ecological Communities are listed as likely to occur within the site's area, none of them are present on site.

Threatened Species:

No threatened species listed within the EPBC Act were recorded on site during fieldwork.

Given that the Subject Site does not contain areas of potential habitat onsite it is not considered that the development of this land as proposed is likely to significantly impact potential habitat.

Migratory Species:

A number of EPBC listed migratory species have some potential to visit the site on an irregular basis. However, it is not considered that the development of this land as proposed is likely to significantly affect the potential habitat of such species, or disrupt migratory patterns.

EPBC Act Assessment Conclusion:

No MNES (specifically in this instance threatened species, threatened ecological communities or listed migratory species) are expected to be impacted upon significantly as a result of the proposal.



10.0 Recommendations

The following general recommendations are made for consideration to minimise localised impacts on biodiversity in general as a result of the development of the site:

- Landscape tree plantings should consider the use of species that provide a suitable long-term benefit to the local native fauna;
- Appropriate erosion and sedimentation controls should be employed during construction to limit offsite movement of soils into adjacent areas;
- Appropriate weed management and machinery hygiene controls should be employed during construction to prevent further spread of exotic species and plant diseases locally.



11.0 References

- Department of Environment and Climate Change (DECC) (2008) *Vegetation of the Cessnock-Kurri Region, Survey, Classification & Mapping, Cessnock LGA, New South Wales*, DECC, NSW, Sydney.
- Department of Environment and Conservation (2004) *Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities. Working Draft*. NSW Department of Environment and Conservation 2004.
- Department of Environment and Energy (2020). *Protected Matters Search*. Accessed February 2020. DoEE, Canberra, ACT.
<http://www.environment.gov.au/webgis-framework/apps/pmst/pmst.jsf>.
- Department of Planning, Industry and the Environment (2020). *Koala Habitat Protection Guideline 2019*. NSW Department of Planning, Industry and the Environment, Sydney, NSW.
- Harden, G (ed.) (2000) *Flora of New South Wales, Volume 1* (revised ed.). UNSW, Kensington, NSW.
- Harden, G (ed.) (2002) *Flora of New South Wales, Volume 2* (revised ed.). UNSW, Kensington, NSW.
- Harden, G (ed.) (1992) *Flora of New South Wales, Volume 3*. UNSW, Kensington, NSW.
- Harden, G (ed.) (1993) *Flora of New South Wales, Volume 4*. UNSW, Kensington, NSW.
- Office of Environment & Heritage (OEH) (2020). *Atlas of NSW Wildlife*. Accessed April 2020.
https://www.environment.nsw.gov.au/atlaspublicapp/UI_Modules/ATLAS_/AtlasSearch.aspx.
- OEH (2013). *Remnant Vegetation of the western Cumberland subregion, 2013 Update*. Accessed April 2020.
- OEH (2019). *Threatened Species, Populations and Ecological Communities website*. Accessed April 2020.
<https://www.environment.nsw.gov.au/topics/animals-and-plants/threatened-species>.
- Pizzey, G (2012). *The Field Guide to the Birds of Australia*. Ninth Edition, Harper Collins Publishers.



Richardson, F.J., Richardson, R.G. and Shepherd, R.C.H (2011). *Weeds of the South-East, An Identification Guide For Australia*. Second Edition. Meredith, VIC.

Robinson, L (1991) *Field Guide to the Native Plants of Sydney*. Revised Second Edition. Kangaroo Press.

Rose, H, Kidson, J, Rose, C and Edwards, C (2013) *Grasses of the NSW Tablelands*. Tocal College, Department of Primary Industries, Tocal, NSW.



Appendix A – Flora Species List & BAM Plot Data



AEP

Family Name	Scientific Name	Common Name
Alliaceae	<i>Nothoscordum borbonicum</i> *	Onion Weed
Amaranthaceae	<i>Alternanthera denticulata</i>	Lesser Joyweed
Anthericaceae	<i>Tricoryne elatior</i>	Yellow Rush Lily
Asteraceae	<i>Bidens pilosa</i> *	Cobbler's Pegs
Asteraceae	<i>Cirsium vulgare</i> *	Spear Thistle
Asteraceae	<i>Conyza bonariensis</i> *	Flax-leaf Fleabane
Asteraceae	<i>Hypochaeris radicata</i> *	Flatweed
Asteraceae	<i>Senecio madagascariensis</i> *	Fireweed
Asteraceae	<i>Sonchus oleraceus</i> *	Common Sow-thistle
Chenopodiaceae	<i>Einadia hastata</i>	Berry Saltbush
Cyperaceae	<i>Carex inversa</i>	Knob Sedge
Cyperaceae	<i>Cyperus gracilis</i>	Slender Flat Sedge
Cyperaceae	<i>Cyperus rotundus</i> *	Nutgrass
Cyperaceae	<i>Cyperus sesquiflorus</i> *	
Cyperaceae	<i>Fimbristylis dichotoma</i>	Common Fringe-rush
Euphorbiaceae	<i>Triadica sebifera</i> *	Chinese Tallowood
Fabaceae	<i>Glycine clandestina</i>	Twining Glycine
Fabaceae	<i>Wisteria sinensis</i> *	Chinese wisteria
Lamiaceae	<i>Stachys arvensis</i> *	Stagger Weed
Liliaceae	<i>Chlorophytum comosum</i> *	Spider Plant
Lythraceae	<i>Lagerstroemia indica</i> *	Crepe Myrtle
Malvaceae	<i>Modiola caroliniana</i> *	Red-flowered Mallow
Malvaceae	<i>Sida rhombifolia</i> *	Paddy's Lucerne
Meliaceae	<i>Melia azedarach</i>	White Cedar
Myrtaceae	<i>Callistemon salignus</i>	Willow Bottlebrush
Myrtaceae	<i>Eucalyptus sp.</i>	
Oxalidaceae	<i>Oxalis corniculata subsp. corniculata</i> *	
Poaceae	<i>Cenchrus clandestinum</i> *	Kikuyu
Poaceae	<i>Chloris truncata</i>	Windmill Grass
Poaceae	<i>Chloris virgata</i> *	Feathertop Rhodes Grass
Poaceae	<i>Cynodon sp.</i> *	Couch
Poaceae	<i>Digitaria ciliaris</i> *	Summer Grass
Poaceae	<i>Eleusine tristachya</i> *	Goose Grass
Poaceae	<i>Eragrostis brownii</i>	Brown's Lovegrass
Poaceae	<i>Eragrostis mexicana</i> *	Mexican Lovegrass
Poaceae	<i>Eriochloa australiensis</i>	Australian Cupgrass
Poaceae	<i>Microlaena stipoides</i>	Weeping Grass
Poaceae	<i>Paspalidium distans</i>	
Poaceae	<i>Paspalum dilatatum</i> *	Paspalum
Poaceae	<i>Setaria parviflora</i> *	Slender Pigeon Grass
Poaceae	<i>Sorghum halpense</i> *	Johnson Grass
Poaceae	<i>Sporobolus africanus</i> *	Parramatta Grass
Poaceae	<i>Sporobolus fertilis</i> *	Giant Parramatta Grass
Poaceae	<i>Stenotaphrum secundatum</i> *	Buffalo Grass
Poaceae	<i>Themeda australis</i>	Kangaroo Grass
Polygonaceae	<i>Rumex crispus</i> *	Curled Dock
Portulacaceae	<i>Portulaca oleracea</i>	Purslane
Primulaceae	<i>Lysimachia arvensis</i> *	Scarlet Pimpernel
Rubiaceae	<i>Richardia stellaris</i> *	



AEP

Family Name	Scientific Name	Common Name
Solanaceae	<i>Solanum sisymbriifolium</i> *	
Verbenaceae	<i>Verbena bonariensis</i> *	Purpletop

* - Introduced species



BAM Plot Field Data

HTE - High Threat Exotic

Family	Scientific Name	Common Name	BAM Growth Form	HTE	Plot 1
Amaranthaceae	<i>Alternanthera denticulata</i>	Lesser Joyweed	Forb		0.1
Anthericaceae	<i>Tricoryne elatior</i>	Yellow Rush Lily	Forb		0.1
Asteraceae	<i>Bidens pilosa*</i>	Cobbler's Pegs	nil - exotic	Y	0.1
Asteraceae	<i>Cirsium vulgare*</i>	Spear Thistle	nil - exotic		0.1
Asteraceae	<i>Hypochaeris radicata*</i>	Flatweed	nil - exotic		0.1
Asteraceae	<i>Senecio madagascariensis*</i>	Fireweed	nil - exotic	Y	0.1
Asteraceae	<i>Sonchus oleraceus*</i>	Common Sow-thistle	nil - exotic		0.1
Chenopodiaceae	<i>Einadia hastata</i>	Berry Saltbush	Forb		0.1
Cyperaceae	<i>Carex inversa</i>	Knob Sedge	Sedge		0.1
Cyperaceae	<i>Cyperus gracilis</i>	Slender Flat Sedge	Sedge		0.1
Cyperaceae	<i>Cyperus rotundus*</i>	Nutgrass	nil - exotic		0.3
Cyperaceae	<i>Cyperus sesquiflorus*</i>		nil - exotic		0.1
Fabaceae	<i>Glycine clandestina</i>	Twining Glycine	Vine		0.1
Fabaceae	<i>Wisteria sinensis*</i>	Chinese wisteria			0.3
Lamiaceae	<i>Stachys arvensis*</i>	Stagger Weed			0.1
Malvaceae	<i>Modiola caroliniana*</i>	Red-flowered Mallow	nil - exotic		0.1
Malvaceae	<i>Sida rhombifolia*</i>	Paddy's Lucerne	nil - exotic		0.3
Meliaceae	<i>Melia azedarach</i>	White Cedar	Tree		0.3



AEP

Family	Scientific Name	Common Name	BAM Growth Form	HTE	Plot 1
Myrtaceae	<i>Eucalyptus sp.</i>		Tree		0.1
Oxalidaceae	<i>Oxalis corniculata subsp. corniculata*</i>				0.1
Poaceae	<i>Cenchrus clandestinum*</i>	Kikuyu	nil - exotic	Y	27
Poaceae	<i>Chloris virgata*</i>	Feathertop Rhodes Grass			0.1
Poaceae	<i>Cynodon sp.*</i>		nil - exotic		5
Poaceae	<i>Digitaria ciliaris*</i>	Summer Grass	nil - exotic		0.3
Poaceae	<i>Eragrostis mexicana*</i>	Mexican Lovegrass	nil - exotic		0.1
Poaceae	<i>Microlaena stipoides</i>	Weeping Grass	Other Grass		0.2
Poaceae	<i>Paspalidium distans</i>		Tussock Grass		0.2
Poaceae	<i>Paspalum dilatatum*</i>	Paspalum	nil - exotic	Y	10
Poaceae	<i>Setaria parviflora*</i>	Slender Pigeon Grass	nil - exotic		10
Poaceae	<i>Sporobolus fertilis*</i>	Giant Parramatta Grass	nil - exotic	Y	0.1
Poaceae	<i>Stenotaphrum secundatum*</i>	Buffalo Grass	nil - exotic	Y	10
Poaceae	<i>Themeda australis</i>	Kangaroo Grass	Tussock Grass		0.1
Polygonaceae	<i>Rumex crispus*</i>	Curled Dock	nil - exotic		0.1
Primulaceae	<i>Lysimachia arvensis*</i>	Scarlet Pimpernel	nil - exotic		0.1
Rubiaceae	<i>Richardia stellaris*</i>		nil - exotic		0.1
Solanaceae	<i>Solanum sisymbriifolium*</i>		nil - exotic		0.3
Verbenaceae	<i>Verbena bonariensis*</i>	Purpletop	nil - exotic		0.1



Appendix B – Expected Fauna Species List



EXPECTED FAUNA SPECIES LIST

The following list includes fauna species that could be reasonably expected to occur on the study site at some point, given site attributes and location.

“●” - species observed or indicated by scats, tracks etc. on, over or near the site during recent surveys by AEP (2019 - 2020).

* - Introduced species

? - Unconfirmed record, anecdotal records etc.

Threatened species listed under the *Biodiversity Conservation Act* 2016 (BC Act) or the *Environment Protection and Biodiversity Conservation Act* 1999 (EPBC Act) are indicated in **bold font**.



AEP

Family Name	Scientific Name	Common Name
Amphibians		
Hylidae	<i>Litoria fallax</i>	Eastern Dwarf Tree Frog
Hylidae	<i>Litoria peronii</i>	Peron's Tree Frog
Hylidae	<i>Litoria phyllochroa</i>	Leaf-green Tree Frog
Hylidae	<i>Litoria tyleri</i>	Tyler's Tree Frog
Hylidae	<i>Litoria verreauxii</i>	Verreaux's Frog
Myobatrachidae	<i>Crinia signifera</i>	Common Eastern Froglet
Myobatrachidae	<i>Limnodynastes peronii</i>	Brown-striped Frog
Reptiles		
Agamidae	<i>Intelligama lesueurii</i>	Eastern Water Dragon
Agamidae	<i>Intelligama lesueurii lesueurii</i>	Eastern Water Dragon
Agamidae	<i>Pogona barbata</i>	Bearded Dragon
Elapidae	<i>Hemiaspis signata</i>	Black-bellied Swamp Snake
Elapidae	<i>Notechis scutatus</i>	Tiger Snake
Elapidae	<i>Pseudechis porphyriacus</i>	Red-bellied Black Snake
Elapidae	<i>Pseudonaja textilis</i>	Eastern Brown Snake
Pythonidae	<i>Morelia spilota spilota</i>	Diamond Python
Scincidae	<i>Eulamprus quoyii</i>	Eastern Water-skink
Scincidae	<i>Eulamprus tenuis</i>	Barred-sided Skink
Scincidae	<i>Lampropholis delicata</i>	Dark-flecked Garden Sunskink
Scincidae	<i>Tiliqua scincoides</i>	Eastern Blue-tongue
Varanidae	<i>Varanus varius</i>	Lace Monitor
Birds		
Acanthizidae	<i>Acanthiza nana</i>	Yellow Thornbill
Acanthizidae	<i>Acanthiza pusilla</i>	Brown Thornbill
Acanthizidae	<i>Gerygone olivacea</i>	White-throated Gerygone
Acanthizidae	<i>Sericornis frontalis</i>	White-browed Scrubwren
Accipitridae	<i>Aquila audax</i>	Wedge-tailed Eagle
Accipitridae	<i>Haliastur sphenurus</i>	Whistling Kite
Alcedinidae	<i>Dacelo novaeguineae</i>	Laughing Kookaburra
Anhingidae	<i>Anhinga novaehollandiae</i>	Australasian Darter
Apodidae	<i>Apus pacificus</i>	Fork-tailed Swift
Ardeidae	<i>Ardea ibis</i>	Cattle Egret
Ardeidae	<i>Ardea pacifica</i>	White-necked Heron
Ardeidae	<i>Egretta garzetta</i>	Little Egret
Ardeidae	<i>Egretta novaehollandiae</i>	White-faced Heron



AEP

Family Name	Scientific Name	Common Name
Artamidae	<i>Cracticus nigrogularis</i>	Pied Butcherbird
Artamidae	<i>Cracticus tibicen</i>	Australian Magpie
Artamidae	<i>Cracticus torquatus</i>	Grey Butcherbird
Artamidae	<i>Strepera graculina</i>	Pied Currawong
Cacatuidae	<i>Cacatua galerita</i>	Sulphur-crested Cockatoo
Cacatuidae	<i>Cacatua sanguinea</i>	Little Corella
Cacatuidae	<i>Eolophus roseicapillus</i>	Galah
Charadriidae	<i>Vanellus miles</i>	Masked Lapwing
Columbidae	<i>Geopelia striata</i>	Peaceful Dove
Columbidae	<i>Ocyphaps lophotes</i>	Crested Pigeon
Corcoracidae	<i>Corcorax melanorhamphos</i>	White-winged Chough
Corvidae	<i>Corvus coronoides</i>	Australian Raven
Cuculidae	<i>Cacomantis pallidus</i>	Pallid Cuckoo
Cuculidae	<i>Chalcites basalis</i>	Horsfield's Bronze-Cuckoo
Cuculidae	<i>Eudynamys orientalis</i>	Eastern Koel
Cuculidae	<i>Scythrops novaehollandiae</i>	Channel-billed Cuckoo
Estrildidae	<i>Neochmia temporalis</i>	Red-browed Finch
Hirundinidae	<i>Hirundo neoxena</i>	Welcome Swallow
Laridae	<i>Chroicocephalus novaehollandiae</i>	Silver Gull
Maluridae	<i>Malurus cyaneus</i>	Superb Fairy-wren
Megaluridae	<i>Megalurus gramineus</i>	Little Grassbird
Megaluridae	<i>Megalurus timoriensis</i>	Tawny Grassbird
Meliphagidae	<i>Acanthorhynchus tenuirostris</i>	Eastern Spinebill
Meliphagidae	<i>Anthochaera chrysoptera</i>	Little Wattlebird
Meliphagidae	<i>Manorina melanocephala</i>	Noisy Miner
Meliphagidae	<i>Manorina melanophrys</i>	Bell Miner
Meliphagidae	<i>Nesoptilotis leucotis</i>	White-eared Honeyeater
Meliphagidae	<i>Philemon corniculatus</i>	Noisy Friarbird
Monarchidae	<i>Grallina cyanoleuca</i>	Magpie-lark
Pardalotidae	<i>Pardalotus punctatus</i>	Spotted Pardalote
Pardalotidae	<i>Pardalotus striatus</i>	Striated Pardalote
Passeridae	<i>Passer domesticus*</i>	House Sparrow
Pelecanidae	<i>Pelecanus conspicillatus</i>	Australian Pelican
Petroicidae	<i>Petroica rosea</i>	Rose Robin
Podargidae	<i>Podargus strigoides</i>	Tawny Frogmouth
Psittacidae	<i>Platycercus elegans</i>	Crimson Rosella
Psittacidae	<i>Platycercus eximius</i>	Eastern Rosella
Psittacidae	<i>Trichoglossus haematodus</i>	Rainbow Lorikeet

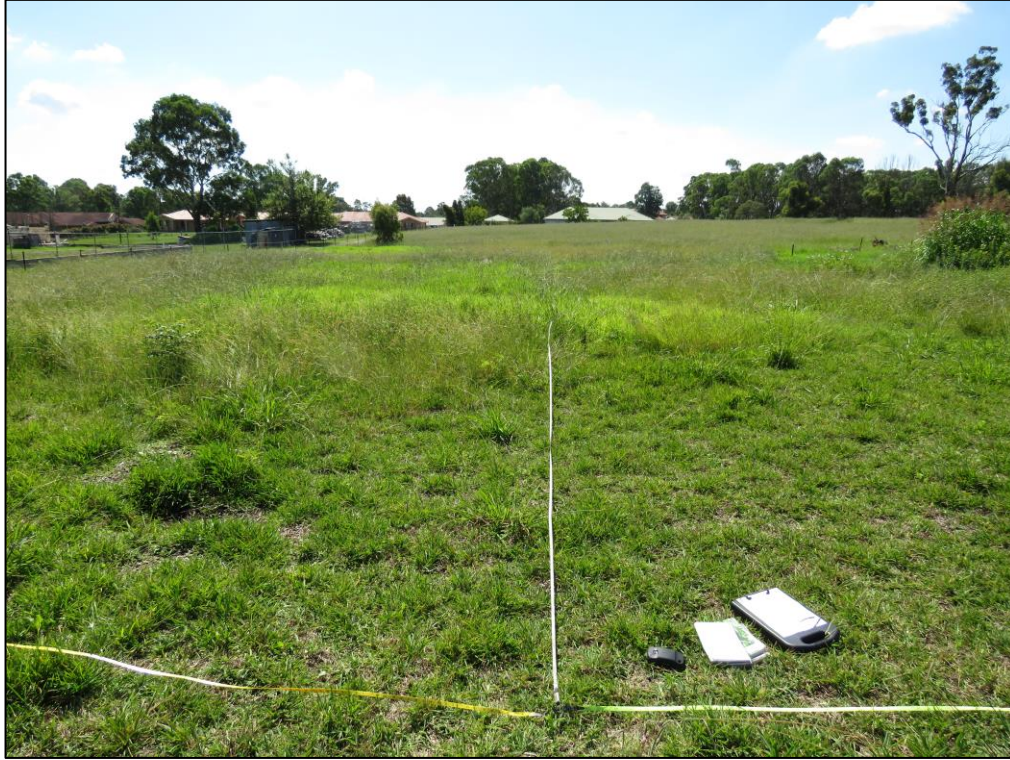


AEP

Family Name		Scientific Name	Common Name
Psophodidae		<i>Psophodes olivaceus</i>	Eastern Whipbird
Ptilonorhynchidae		<i>Ptilonorhynchus violaceus</i>	Satin Bowerbird
Rhipiduridae		<i>Rhipidura albiscapa</i>	Grey Fantail
Rhipiduridae		<i>Rhipidura leucophrys</i>	Willie Wagtail
Strigidae		<i>Ninox novaeseelandiae</i>	Southern Boobook
Sturnidae		<i>Sturnus tristis</i> *	Common Myna
Sturnidae		<i>Sturnus vulgaris</i> *	Common Starling
Timaliidae		<i>Zosterops lateralis</i>	Silvereye
Mammals			
Bovidae		<i>Bos taurus</i> *	European cattle
Bovidae		<i>Capra hircus</i> *	Goat
Bovidae		<i>Ovis aries</i> *	Sheep (feral)
Canidae		<i>Canis lupus</i> *	Dingo, domestic dog
Canidae		<i>Canis lupus familiaris</i> *	Dog
Canidae		<i>Vulpes vulpes</i> *	Fox
Cervidae		<i>Cervus elaphus</i> *	Red Deer
Equidae		<i>Equus asinus</i> *	Donkey
Equidae		<i>Equus caballus</i> *	Horse
Felidae		<i>Felis catus</i> *	Cat
Leporidae		<i>Lepus capensis</i> *	Brown Hare
Leporidae		<i>Oryctolagus cuniculus</i> *	Rabbit
Macropodidae		<i>Macropus giganteus</i>	Eastern Grey Kangaroo
Macropodidae		<i>Wallabia bicolor</i>	Swamp Wallaby
Molossidae		<i>Austronomus australis</i>	White-striped Freetail-bat
Molossidae		<i>Mormopterus ridei</i>	Eastern Free-tailed Bat
Muridae		<i>Mus musculus</i> *	House Mouse
Muridae		<i>Rattus fuscipes</i>	Bush Rat
Muridae		<i>Rattus rattus</i> *	Black Rat
Petauridae		<i>Petaurus breviceps</i>	Sugar Glider
Phalangeridae		<i>Trichosurus vulpecula</i>	Common Brushtail Possum
Pseudocheiridae		<i>Pseudocheirus peregrinus</i>	Common Ringtail Possum
Tachyglossidae		<i>Tachyglossus aculeatus</i>	Short-beaked Echidna
Vespertilionidae		<i>Nyctophilus geoffroyi</i>	Lesser Long-eared Bat
Vespertilionidae		<i>Nyctophilus gouldi</i>	Gould's Long-eared Bat



Appendix C – Site Photographs



Above: BAM Plot Start facing north. **Below:** BAM Plot End facing south.





AEP



Above: View of eastern edge showing grassland. **Below:** View of western edge showing grassland.





Appendix D – Author CVs

Tim Mouton

Curriculum Vitae

Tim works with AEP in the role of Ecologist. Tim has over 10 years of professional experience managing projects in the fields of ecology, natural area restoration, biodiversity conservation, community education, and construction environmental management. Tim also has 5 years experience working in the field as a bush regenerator.

Qualifications

- Bachelor of Environmental Science University of Newcastle (2001)
- Conservation Land Management Certificate II Tafe (2003)
- Master of Environmental Science Southern Cross University (2008)

Further Education & Training (select summary)

- Biodiversity Assessment Methodology (BAM) Accredited Assessor (BAAS: 19083)
- NSW Class C Driver's Licence. Experienced 4WD operator.
- OH&S NSW White Card
- Erosion & Sediment Control Training (4 day Blue Book course / CPESC)
- Feral Animal Control training (1080 & Pindone baiting)
- Certificate 3 in Chemical Application (AQF3)

Fields of Special Competence

- Ecological field survey, covering terrestrial and aquatic flora and fauna
- Highly proficient at botanical surveys and establishing monitoring programs
- Project Management and auditing
- Restoration Science

Professional Affiliations / Memberships (past / present)

- Board of Management member for Worimi Conservation Lands (NPWS & Worimi LALC)
- Certified Practitioner in Erosion & Sediment Control (CPESC) (not currently active)

Relevant Employment History

2019-present Ecologist
Anderson Environment & Planning, Newcastle

Currently employed by Anderson Environment & Planning to assist in the provision of consulting services to land, property, mining industry, legal and government sectors. Covering ecological, project management, environmental, planning services, advices, strategy and representation.

2015-2018 Senior Project Officer / Ecologist
Conservation Volunteers Australia / WetlandCare Australia

- Project managing on-ground restoration works including revegetation, site stabilisation, weed control and bush regeneration.
- Facilitating community engagement events, and supervision of volunteers.
- Undertaking site assessments, ecological surveys, and preparing plans of management.
- Scoping and preparing grant applications, managing all aspects of grant delivery, budgets, and reporting.

2009-2015 Senior Ecologist / Environmental Scientist
Onsite Environmental Management

- Undertaking and project managing detailed environmental assessments including flora and fauna surveys, threatened species assessments, management plans and monitoring reports.
- Environmental site management, monitoring and compliance auditing on large scale infrastructure projects and extractive industries.

2008-2009 Bush Regenerator / Leading Hand
Lane Cove Council
Australian Wetlands

- Undertaking bush regeneration activities including removal of environmental/noxious weeds, track construction and maintenance, native seed collection and propagation, fire assisted regeneration, feral animal control and supervision and training of volunteers.
- Supervising bush regeneration and weed management teams.
- Undertaking large scale revegetation works on infrastructure projects involving mass tubestock planting, site stabilisation and maintenance weeding.

2006-2007 Ecologist / Environmental Scientist
GeoLINK Consulting

- Undertaking and project managing detailed environmental assessments including flora and fauna surveys, threatened species assessments, management plans and monitoring reports.
- Monitoring and analysis of wetland, groundwater, and domestic wastewater systems.

2002-2006 Bush Regenerator / Leading Hand
Gondwana Bush Restoration
Willoughby City Council

- Undertaking bush regeneration activities including removal of environmental/noxious weeds, track construction and maintenance, native seed collection and propagation, fire assisted regeneration, feral animal control and translocation of vegetation.
- Supervision and training of bush regeneration teams and volunteers.

2001-2002 **John Holland Construction**
Environmental Officer

- Environmental site management and monitoring and reporting on large scale infrastructure projects.

Relevant Volunteer Experience

2014 - Current **Burwood Beach Coastcare - Facilitator (Volunteer)**

Supporting and managing volunteers, on-ground works, promotion and funding opportunities on a monthly basis, to undertake conservation and restoration activities within Glenrock State Conservation Area (NPWS estate).

2013 - 2016 **Humane Society International – EPBC Act Nomination Support**

Preparation of Threatened Ecological Community (TEC) nominations under the Commonwealth Environment Protection and Biodiversity Conservation Act, 1999 (EPBC Act).

Warwick Muir

Curriculum Vitae

Warwick works with AEP in the role of Ecologist. Whilst studying at the University of Newcastle, he conducted ecological field studies as a requirement of his degree courses, gaining experience in the field. He has also undertaken volunteering for higher-level students in field reporting to assist in completion of their studies.

Qualifications

- Bachelor of Science (Biology), University of Newcastle (2019)

Licences/Certificates

- First Aid Certificate
- Class C NSW Drivers Licence
- Construction White Card

Ecological Field Experience

- Riparian vegetation study, including vegetation species and cover surveys, vegetation zone classification and biobanking assessment methods to assess for proposed restoration works.
- Avifauna survey and observation to complete an independently hypothesised animal behaviour investigation in situ.
- Forest and woodland investigations, including vegetation species and cover surveys, habitat appraisal and leaf litter invertebrate observation.
- Macro-bat spotlighting, flight, roost and forage habitat surveys to develop a suggested management strategy for the studied species.
- Ecotoxicological testing for bio-sensitive contaminants in situ to establish runoff, lethality, and bio-accumulative relationships within in the environment.

Volunteer Experience

- Bush Regeneration Volunteer, Newcastle Landcare
- Field data collection for environmental Honours and PhD candidates in various locations.

Employment History

Feb 2020 – Current

Ecologist

Anderson Environment & Planning, Newcastle

Natalie Black

Curriculum Vitae

Natalie works with AEP in the role of Senior Environmental Manager. She has extensive knowledge in environmental management, environmental planning, and report writing and assessment. With a detail understanding of planning, catchment management, coastal management and rehabilitation. Natalie has had a successful career with both state and local government in conservation, planning and field investigation roles. Natalie has also gained extensive communication skills and project management through her previous career in lecturing. Her background and experience in the ecological and planning fields is utilised in a diverse array of application in her current role.

Qualifications

- B.Sc (Hons), University of Newcastle, 2002 Sustainable Resource Management and Marine Science.
- Master Planning, University of Technology Sydney 2007.
- Certificate IV Training and Assessment at NSW TAFE 2012.
- BAM Assessor; accreditation number: BAAS19076.

Certification

- Evidence Gathering and Legal Process (Australian Institute of Environmental Health).
- Conflict Resolution Course (LGSA).
- Report Writing Course (LGSA).
- Powerful Presentation (LGSA).
- NSW Rural Fire Services Bush Fire Assessment
- Relocation of Threatened Species (Botanical Gardens Sydney).
- Sustainable Home Assessment Reduction Revolution.
- Flora and Fauna Survey Assessments Niche Environment and Heritage.
- First Aid TAFE.

Fields of Special Competence

- Environmental Planning
- Environmental Management and rehabilitation of catchments coastal waterways. Statement of Environmental Effects (preparation and assessing).
- Communicating with a wide range of stakeholders.
- Development Application
- Education in both Environmental and Planning industries.
- Fish Passage and marine vegetation.
- Koala Plans of Management.
- Policy Development.

Employment History

2019 to present AEP Senior Environmental Manager

2010 to 2019

Natalie Black is the Principal Environmental Planner for Black EARTH Environmental. Working a range of projects, Bush Fire Assessments, Landscaping, Development Applications, Statements of Environmental Effect's, Environmental Management Plans, Sustainability Assessment of both private and businesses, sustainable gardens, environmental assessments for proposed projects and

environmental advice and volunteering for local Sustainable Community Group and Landcare. During this time Natalie also lectured at Hunter TAFE teaching a range of environmental units both face to face and on-line to a varying range of qualification and levels.

2003 to 2010

Natalie was the Natural Resource Manager and Development Assessment Officer at Lismore City Council working with diverse range of professions such as engineers, town planners, environmental health officer, accountants, building surveyors, arborists, councillors. During this time the main projects were grants application, restoration projects, flora and fauna assessments, environmental legal adviser, bush fire assessments, strategic work, development application assessment (ranging from sheds to Designated Developments) and council development application team for internal projects, Council's for climate change, water wise programs and others.

2002 to 2003 was a step into the Policy unit within DPI where Natalie was part of the team working on the Jervis Bay Indigenous Fishing Strategy, and the closure of Port Botany. Dealing with many stakeholders and running workshops with Ministers and community. During 2003 with Natalie was the North Coast Fish Passage Officer. Managing an Environmental Trust Grant of \$1 million to remove 50 structures that block fish passage within the catchments of the North Coast. This project had all 50 sites contracted by the end of the 12 months with 70% of these projects commenced. This role allowed for the development of field assessments, independent work and communication with a range of stakeholders.

2000 saw the commencement of Natalie's career with NSW Department of Primary Industries (Fisheries Unit) in the Office of Conservation in Sydney. Natalie was part of the Conservation team that reviewed integrated development applications in the Sydney Region. The assessments ranged from jetties to the Lane Cove Tunnel, North West T-Way and the expansion of the M7 and fish ladders.