Australian Capital Territory

Planning and Development (EIS Exemption Application – Symonston Small Scale Agriculture Subdivision) Consultation Notice 2019

Notifiable Instrument NI2019- 744

made under the

Planning and Development Act 2007, s 211C (EIS exemption application – public consultation) and s 147AB (Public notification of concurrent documents)

1 Name of instrument

This instrument is the *Planning and Development (EIS Exemption Application – Symonston Small Scale Agriculture Subdivision) Consultation Notice 2019.*

2 Commencement

This instrument commences on the day after its notification day.

3 EIS exemption application

(1) Purdon Planning is the proponent of the proposed small-scale agriculture subdivision located within Block 5 Section 103 Symonston.

(2) The proponent has applied for an EIS exemption for the proposal under section 211B of the *Planning and Development Act 2007*. This EIS exemption application is in the schedule and is available on the planning and land authority website (see note 1).

(3) The EIS exemption application is a concurrent document for a concurrent development application.

(4) In this instrument:

concurrent document see section 147AA of the Act.

concurrent consultation period see section 147AA of the Act.

concurrent development application see section 147AA of the Act.

EIS means environmental impact statement, see section 208 of the Act.

EIS exemption see section 211 of the Act.

EIS exemption application see section 211B of the Act.

4 Concurrent development application

(1) The proponent has lodged a concurrent development application, DA 201835065, for the proposal under section 147AB of the Act. The concurrent development application is available on the planning and land authority website (see note 2).

(2) The concurrent development application cannot be finalised until the concurrent process is complete (see s 147AB(3)(a)(ii) of the Act).
(3) If the EIS exemption application is refused, rejected or withdrawn, the concurrent development application is taken to have been refused (see s 147AB(3)(c) of the Act).

5 Public consultation

(1) The public consultation period (***concurrent consultation period***) on the concurrent development application commences on the day this instrument commences and ends 35 working days later. Anyone may give a written representation to the Chief Planning Executive (delegate) about the EIS exemption application or the concurrent development application.
(2) Representations may be given only during the consultation period.

6 Making of representations

(1) Representations should be addressed to the Chief Planning Executive and sent by:

- email to EPDCustomerServices@act.gov.au;
- mail to:
  Environment, Planning and Sustainable Development Customer Service
  GPO Box 158
  Canberra ACT 2601; or
- hand to the Environment, Planning and Sustainable Development Customer Service Centre at 16 Challis Street, Dickson.

(2) Representations should include the application reference number (EIS exemption 201900005) and the name and contact details of the person making the representation.

Note 1 The EIS exemption application is available during the consultation period on the planning and land authority website at https://www.planning.act.gov.au/development_applications/da_assessment/environmental_assessment/exemption_from_requiring_an_eis_s211

Note 2 The concurrent development application is available during the consultation period on the planning and land authority website at https://www.planning.act.gov.au/development_applications/pubnote

Note 3 Printed copies of the EIS exemption application and background documents are available for inspection and purchase at the Environment, Planning and Sustainable Development Customer Service Centre, 16 Challis Street, Dickson. The Customer Service Centre is open Monday to Friday (except public holidays) between 8:30am and 4:30pm. Please call 02 6207 1923 to arrange a copy for purchase.

Note 4 As required by s 211F of the Act, copies of submissions will be made publicly available on the planning and land authority website (see note 1) until the consultation period ends or the submission is withdrawn. Also, copies of submissions will be provided to the proponent. Published submissions will include the name and contact details of the person making the submission as well as the other content of the submission. A request for exclusion of information from publication can be made under section 411 or 412 of the Act. A request for exclusion under these sections must be made in writing, clearly identifying what exclusions are sought and how the request satisfies the exclusion criteria in sections 411 or 412 of the Act.

Ben Ponton
Chief Planning Executive
(Delegate of the Minister)
20 November 2019

Schedule - see section 3 (2)

Application for Environmental Impact Assessment Processes - Submission confirmation

Your submission has been successful. Please keep a copy of this receipt for your records.

Date and time

24 Jan 2019 10:06:59 AM

Reference code

TFP9Q5

Access Canberra
ABN: 68 367 113 536

GPO Box 158
Canberra ACT 2601

Phone: (02) 6207 1923
Email: epdcustomerservices@act.gov.au

Type of application

Type of application *

Request for Exemption to Provide EIS

Have you attended a pre-application meeting or received written pre-application advice in relation to the proposal that is the subject of this application? *

- ○ Yes
- ◉ No

Project name *

B5S103 Symonston Subdivision

Project description *

The proposed development is a subdivision of Block 5 Section 103 Symonston into eight (8) separate blocks each with the same lease purpose clause being agriculture with ancillary dwelling. This development will require a surrender and regrant of the existing crown lease and the construction of new and upgraded driveway cross-overs to access the subdivision, as well as minor road works and rural fencing. The DA does not seek approval for any construction of residential dwellings or other structures other than above. Studies have been conducted and impact mitigation measures proposed based on those studies that prevent serious future impacts and prevent the requirement for an EIS

Lease/site details

Site 1

Suburb *: SYMONSTON
Section *: 103
Block *: 5
Address line 1: 25 Mugga Lane
Address line 2:
Suburb: SYMONSTON
State: ACT
Postcode: 2609
Land Use Zone/s applicable to this site *: NUZ1

Applicant details

Are you applying as: *: a company/department/government agency

Name of company/department/government agency *: Purdon Planning
Position held in company/department/government agency *: Office Manager

Enter an ABN or ACN: *

ABN (Australian Business Number): 14659841354
ACN (Australian Company Number):

Contact person

Title: Ms
Given name *: Emma
Family name *: Conant

Postal address

Address line 1 *: 1 Torrens St
Address line 2: Unit 4 Cooyong Centre
Suburb *: Braddon
State *: ACT
Postcode *: 2612

Enter at least one phone number: *

Home phone number:
Work phone number: 0262571511
Mobile number:

Email *

purdons@purdon.com.au

Lessee (property owners) or land custodian (Government) details

Lessee/land custodian 1

☐ Same as applicant

Is the lessee/land custodian a company? *

◉ Yes ○ No

Title | Given name * | Family name *

Mr | Adam | Moore

Company name * | Position held *

Symcanfin Pty Ltd | Director

Enter an ABN or ACN: *

ABN (Australian Business Number) | ACN (Australian Company Number)

57502416469 |

Address line 1 *

Unit 14/5 Tennant St

Address line 2

Suburb * | State * | Postcode *

Fyshwick | ACT | 2609

Enter at least one phone number: *

Home phone number | Work phone number | Mobile number

| 61019800 |

Email *

adam.moore@pbsbuilding.com.au

Request for Exemption to Provide Environmental Impact Statement

- [ ] The relevant development table states that the impact track applies.
- [x] The proposal is of a kind mentioned in Schedule 4 of the Planning and Development Act 2007 (http://www.legislation.act.gov.au/a/2007-24/).

Please list the relevant Part(s) and item numbers:

Part 4.3 - Item 2

- [ ] The Minister has made a declaration under section 124 in relation to the proposal.
- [ ] Section 125 (Declaration by Public Health Act Minister affects assessment track) provides that the impact track applies to the proposal.
- [ ] Section 132 (Impact track applicable to development proposals not otherwise provided for) provides that the impact track applies to the proposal.
- [ ] A bilateral assessment applies as the proposal is a controlled action under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (http://www.environment.gov.au/epbc).

Prescribed entities

Have you had any meetings/discussions with relevant prescribed entities? *

- (●) Yes
- ( ) No

Entity 1

Entity *

Other

Other *

EPSDD

Dates of meeting *

23/10/2018

Entity contact

Title

Mr

Given name *

James

Family name *

Bennett

Enter at least one phone number: *

Home phone number

Work phone number

0262054877

Mobile number

Email *

james.bennett@act.gov.au

Environment Protection and Biodiversity Conservation Act 1999 (EPBC)

Does the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* affect your proposal? *

- ○ Yes
- ◉ No

Supporting documents

Attach lessee/land custodian authorisation (http://www.planning.act.gov.au/__data/assets/pdf_file/0006/898422/LETTER_OF_AUTHORISATION.pdf).

Completed form 4 LOA 030718.pdf

Attach all required documentation.

Is your documentation larger than 10MB? *

- (●) Yes
- ( ) No

Conflict of interest declaration

Does the applicant or lessee have any association with EPSDD staff? *

- ( ) Yes
- (●) No

Applicant declaration

Please tick the relevant boxes

- [x] I/we declare that this application is accompanied by all of the required information and or documents and understand that the documentation provided via electronic lodgement will be considered to be the relevant documentation associated with this application; and understand that the information submitted with this application form will undergo a documentation check. *
- [x] I/we declare that this application will be considered lodged once the relevant application fees have been paid; *
- [x] I/we hereby acknowledge that the lessee may authorise ACT Government officers to access the subject property(s) for the purpose of evaluating the proposal; *
- [x] I/we declare that all the information given on this form and its attachments is true and complete; *
- [x] I/we declare that I/we have the appropriate delegation or authority to apply on behalf of the company, organisation or Government agency. *

ACT Government
Environment, Planning and Sustainable Development

Planning and Development Act 2007, s425

Form 4 - LETTER OF AUTHORISATION

PRE APPLICATION MEETINGS DEVELOPMENT APPLICATION
APPLICATION FOR RECONSIDERATION

LEASE/SITE DETAILS (Please Print)

If more than two leases/sites please attach the following details for each additional lease/site on a separate sheet

Block	5	Section	103	Suburb	Symonston
Unit No.		Street Address	25 Mugga Lane		
Block		Section		Suburb	
Unit No.		Street Address			

Describe location where no block and section details are available (e.g. for outdoor dining area location)

LESSEE(S) DETAILS - If more than two lessees please provide details of each additional lessee (Please Print)

1st Lessee Name	Symcanfin Pty Ltd	2nd Lessee Name	

LESSEE AUTHORISATION

This appointment is made under the *Planning and Development Act 2007* and relates to: (please tick)

☑ Pre - application meeting ☑ Development Application ☑ Application for Reconsideration

I/we the lessee(s) authorise the person/company (to be known as *the Applicant*) detailed below:

- ☑ to obtain information in relation to this site through the pre-application process
- ☑ to act on my/our behalf in relation to a development application for the abovementioned site/s
- ☑ to act on my/our behalf in relation to an application for a reconsideration of a development application for the abovementioned site/s
- ☑ to pay all application fees, bonds and securities, liaise with the Planning and Land Authority when required, alter, amend or provide further information as necessary and receive any communications relating to the DA or Application for Reconsideration.

APPLICANT DETAILS (Please Print)

Applicant Name		Email address	
OR			
Company Name	Purdon Planning P/L	Email address	purdones@purdon.com.au

Company Nominees - a Company can list up to three nominees. The first nominee must be authorised to sign on behalf of the Company

Nominee 1	Richard Nash	Nominee 2	Emma Lonan t	Nominee 3	Trevor Fitzpatrick

Approved form AF2017-39 approved by Dorte Ekelund *Chief Planning Executive* Planning and Land Authority on 19 January 2017 under section 425 of the *Planning and Development Act 2007* and revokes approved form AF2014-73.
Authorised by the ACT Parliamentary Counsel—also accessible at www.legislation.act.gov.au

LESSEE(s) DECLARATION If more than two lessees please provide details of each additional lessee on a separate sheet

- I/we declare that I am/we are the lessee(s) of the land described above;
- I/we have been made aware of the declaration clauses in the DA or Application for Reconsideration form; and
- I/we declare that all the information given on this form is true and complete.

1st Lessee's Signature		Date	26.6.2018
2nd Lessee's Signature		Date	26.06.2018

APPLICANT DECLARATION

- I declare that I am the person authorised to sign/sign on behalf of the company described in this form
- I declare that all the information given on this form and its attachments are true and complete;

Applicant Name	Richard Nash Emma Conant	Company Name	Purdon Planning P/L
Signature		Date	3/7/18

LAND CUSTODIAN AUTHORISATION

- I/we declare that I am/we are the land custodian(s) of the public land or unleased land as described above;
- I/we authorise the applicant to obtain information in relation to this site through the pre-application process and make an application for development approval.

Delegate Name	Ken Marshall	Agency Name	TCCS - Roads ACT
Signature		Date	17 December 2018
Delegate Name		Agency Name	
Signature		Date	

THIS AUTHORISATION DOES NOT CONSTITUTE AN APPROVAL IN PRINCIPLE OR OTHERWISE BY THE LAND CUSTODIAN IN RELATION TO THE PROPOSED DEVELOPMENT.

Privacy Notice

The personal information on this form is provided to the Environment, Planning and Sustainable Development Directorate (EPD) to enable the processing of your application. The collection of personal information is authorised by the *Planning and Development Act 2007*. If all or some of the personal information is not collected EPSDD cannot process your application. The Planning and Development Act 2007 requires the details of applications, decisions and orders to be kept on a register and made available for public inspection. Information and documentation relevant to a development application may be made available via the Internet. The personal information you provide may be disclosed to Australian Bureau of Statistics, ACT Revenue Office, the Registrar General's Office, ACTEW Corporation, ActewAGL, Territory and Municipal Services Directorate and other Government agencies with a direct interest in the development assessment process. The information may also be disclosed where authorised by law or court order, or where the Directorate reasonably believes that the use or disclosure of the information is reasonably necessary for enforcement-related activities conducted by, or on behalf of, an enforcement body. EPSDD's Information Privacy Policy contains information about how you may access or seek to correct your personal information held by EPSDD, and how you may complain about an alleged breach of the Territory Privacy Principles. The EPSDD Information Privacy Policy can be found at www.environment.act.gov.au

Contact Details:

Environment, Planning and Sustainable Development Directorate
Customer Service Centres
GPO Box 158, Canberra City 2601
16 Challis Street Dickson ACT 2602

Business Hours: 8.30am to 4.30pm weekdays (excluding Public Holidays)
Phone: (02) 6207 1923
Email: epdcustomerservices@act.gov.au
Website: www.planning.act.gov.au

Agricultural Subdivision

Block 5 Section 103 SYMONSTON, ACT

Application for EIS Exemption

under Section 211 of the
Planning and Development Act 2007

October 2019

Authorised by the ACT Parliamentary Counsel—also accessible at www.legislation.act.gov.au

Prepared For:

Symcanfin Pty Ltd
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DEAKIN ACT 2600
Email: courtney.ahrens@reformdg.com.au
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Ecological Impact Assessment (Capital Ecology, 2018)

Addendum regarding the significance of impacts under the 'worst case scenario' (Capital Ecology, 2019)

Aboriginal & Historical Cultural Heritage Assessment (Past Traces, 2018)

Traffic Assessment (Sellick, 2018)

Water Quality (Sellick, 2018)

Bushfire Assessment (Blackash, 2018)

Glossary of Terms

The following terms and acronyms occur within this document

ACT NC	ACT Nature Conservation Act 2014
ACTPLA	ACT Planning & land Authority
CEEC	'critically endangered' listed ecological community
DA	Development Approval
DP	Deposited Plan
EAR	Environmental Assessment Report
EEC	Endangered Ecological Community
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EPA	Environment Protection Authority
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
EPSDD	Environment Planning and Sustainable Development Directorate
ESCP	Erosion and Sediment Control Plan
ESO	Environmental Significance Opinion
GHG	Greenhouse Gas
GIS	Gas Insulated Switchgear
Ha	Hectare
LALC	Local Aboriginal Land Council
LMA	Land Management Agreement
MNES	Matters of National Environmental Significance
MSDS	Material Safety Data Sheet
NCP	National Capital Plan
NES	National Environmental Significance
PAD	Potential Archaeological Deposit
P&D Act	ACT Planning and Development Act 2007
RAO	Representative Aboriginal Organisations
REF	Review of Environmental Factors
s211	Section 211 of the ACT Planning and Development Act 2007
SAA	Standards Association of Australia
SAC	Statement Against Criteria (of the Territory Plan)
SPC	Symonston Precinct Code
SWMP	Soil and Water Management Plan
TEC	Threatened Ecological Community
TCCS	ACT Transport Canberra & City Services Directorate
TP	Territory Plan
WMP	Waste Management Plan
WMS	Work Method Statement

Summary

The Lessee of Block 5 Section 103 Symonston is seeking approval for subdivision of the subject site into 8 parcels for small scale agriculture use.

The site has an area of approximately 36ha and is adjacent to Hindmarsh Drive, Mugga Lane and Narrabundah Lane. It is currently used as an agricultural property and contains four (4) dwellings. At present the property has eight (8) access points from adjacent roads. The site also contains a number of mature remnant eucalypts, a small area (approx. 3ha) of native grasslands and a small area (approx. 2ha) of Box-Gum Woodland. All of the understorey on the property has been heavily grazed over many years and includes large areas of introduced pasture.

The existing Crown Lease and Land Management Agreement (LMA) for the site contains provisions permitting only certain types of agricultural enterprise and prohibits the removal of trees without prior written consent from the Territory.

Whilst the subdivision alone does not have any direct impact on environmental values, the Environmental Planning and Sustainable Development Directorate (EPSDD) has determined that the Development Application is required to be lodged in the "impact track" for assessment because of the potential for cumulative impacts associated with future development consequences; particularly in relation to loss of native vegetation. Whilst this proposal will not result in clearing of native vegetative, this s211 application assesses the cumulative impacts of clearing native vegetation.

Future works like development of a dwelling or green house will be subject of a future DA.

This proposal does not trigger an assessment or referral under the EPBC Act.

This submission seeks an exemption under s211 of the *ACT Planning and Development Act 2007* from the need to prepare an Environmental Impact Statement (EIS) for the development. A DA has been lodged concurrently.

The application for exemption is based on a number of recent technical studies that cover the ecology and environmental values of the site, as well as traffic, stormwater, WSUD, heritage, visual and bushfire assessment. These studies sufficiently identify and address the potential impacts of the proposed development.

The s211 Exemption application summarises the proposed development and identifies potential cumulative impacts associated with possible future development of the site. Two scenarios are assessed in detail including;

- Direct impacts from the development application
- Future cumulative impacts which would clear native vegetation on the site.

These scenarios are subject to detailed risk assessments where appropriate. The assessment is based on EPSDD Guidelines and range of mitigation measures are identified that further reduce any potential future cumulative impact.

Mitigation measures include provisions in the new Crown Leases and Land Management Agreements for each of the 8 blocks.

This submission concludes, based on a detailed assessment of site conditions, environmental values, assessment of potential cumulative impacts, and the application of appropriate mitigation measures as outlined, that the development will not have a significant adverse environmental impact.

It is therefore recommended that EPSDD accept this s211 Exemption application to enable assessment of the DA.

1.0 Introduction

1.1 Purpose & Background

Development approval is sought by Symcanfin Pty Ltd (the 'Proponent') as the lessee of Block 5 Section 103 Symonston for an eight (8) block small scale agricultural subdivision and minor access driveways, with a lease variation that would permit a single residential dwelling on each block.

Pre-lodgement discussions with the Environmental Planning and Sustainable Development Directorate (EPSDD) have determined that a development application (DA) for the above proposal must be lodged as an "impact track" assessment.

The proposal is considered by EPSDD to have the potential, through cumulative impacts, to result in the clearing of more than 0.5ha of native vegetation. Under normal circumstances this potential impact would require preparation of an Environmental Impact Statement (EIS). However, under section 211 of the *ACT Planning and Development Act 2007* (P&D Act) there is provision for the applicant to prepare and lodge an application for EIS exemption on the basis that the investigation required by an EIS has already been completed.

Accordingly, a number of relevant environmental studies have been conducted on behalf of the lessee by qualified consultants to examine the direct impacts of the development and to consider the consequences of possible future cumulative impacts on the environment in a scenario where all native vegetation is cleared on the site.

This report summarises the proposed development and rationale for the development, describes the existing site and makes an assessment of possible cumulative impacts using established EPSDD methodology and information contained in a number of technical studies commissioned by the Proponent. The investigation and supporting documentation demonstrate that the proposed development will not have any significant adverse environmental impacts and that any possible future adverse cumulative impacts could be addressed by a range of appropriate mitigation measures. The risks associated with future development scenarios are addressed in Section 5.0 of this report, (summarised below in Table 1).

The s211 exemption application should also be read in conjunction with a DA lodged concurrently with ACT Planning and Land Authority (ACTPLA) for assessment in the impact track.

Table 1: Risk Assessment Scenario Summary

Scenario	Section within the report	Scenario summary
1	5.3	Direct impacts from the proposed development
2	5.4	Cumulative Impacts from further actions that can occur only with impact track or ESO assessment by way of future development applications

1.2 Summary Project Description

The proposal is for the creation of eight (8) small scale agricultural sites that permit an ancillary residential dwelling on each block.

This development will require a surrender and regrant of the existing crown lease, issue of new leases (8), construction of new and upgraded driveway crossovers as well as minor road works and rural fencing works.

The DA does not seek approval for construction of any new residential dwellings or other structures. However, it is possible that future lessees may seek approval for construction of a residential dwelling and this prospect together with unspecified land use changes permitted by the lease and the zoning has been included in this s211 assessment under the cumulative impact scenario.

Approval for any future structures will need to be obtained via a subsequent DA process by individual lessees.

1.3 s211 Exemption Request

An exemption under s211 of the *ACT Planning and Development Act 2007,* from the requirement for an EIS is sought on the grounds that recent relevant studies have fully investigated the possible impacts of the proposed development. These impacts are subsequently addressed, and a number of appropriate mitigation measures have been proposed that could be included as conditions of development approval to address any perceived adverse environmental impacts.

The 'triggers' for an EIS under the *ACT Planning & Development Act 2007* are outlined in "*Schedule 4 Development proposals in impact track because of need for EIS*", the trigger relevant to this proposal is summarised below:

- Under Part 4.3 of the *ACT Planning and Development Act 2007*, Development proposals requiring EIS—areas and processes include;

  Item 2: A proposal involving "*the clearing of more than 0.5ha of native vegetation in a native vegetation area, other than on land that is designated as a future urban area under the territory plan, unless the conservator of flora and fauna produces an environmental significance opinion that the clearing is not likely to have a significant adverse environmental impact*".

While the initial subdivision does not propose any activities which would directly trigger Schedule 4, Part 4.3, Item 2 of the ACT *Planning and Development Act 2007*, there is potential that once subdivided, the lessees of each of the eight lots may independently clear up to the 0.5ha limit without triggering an EIS process. This in turn could lead to cumulative land clearance above the 0.5ha threshold across the site. In a scenario where such clearing takes place, this would have a significant adverse environmental impact through the loss of native vegetation and associated habitat values. The proposed subdivision therefore has the potential, through cumulative impacts, to trigger Part 4.3 Item 2 of the P&D Act: "the clearing of more than 0.5 ha of native vegetation in a native vegetation area".

To address the environmental impacts, the submission includes:

- a s211 document including a statement of objectives for the project, a description of the nature of the project, a description of the natural conservation values of the site, relevant environmental and heritage legislation, a preliminary risk assessment, and identification of mitigation measures
- maps and plans of the proposed development and site features including site location, subdivision boundaries, contours, heritage values and habitat areas.
- specialist reports, assessments and studies conducted to date in relation to the proposed development site.
- DA for the proposed development lodged in the impact track

A detailed risk assessment has been undertaken by the consultant team in accordance with *Australian Standard AS/NZS IOS 31000:2009 Risk Management – Principles and Guidelines* for all actions associated with the proposed development in the study area.

The risk assessment process is described in Section 5.0 below and includes an overall summary risk assessment for the proposed development and the cumulative impact scenario.

1.4 Site Overview

The site is located in Symonston and is bounded by Hindmarsh Drive, Mugga Lane and Narrabundah Lane.

Site details are summarised in Section 3.0 below.

1.5 Project Team

The Proponent has engaged a professional consultant team to assist with preparation of this report and related studies.

Specific technical studies lodged with the DA and s211 submission include:

- Ecological Impact Assessment (Capital Ecology, Sept 2018)
- Addendum regarding the significance of impacts under the cumulative scenario (Capital Ecology, Mar 2019)
- Driveway crossover plans (Sellicks, Dec 2018)
- Traffic & Site Access Impact (Sellicks, Dec 2018)
- Erosion & Sediment Control (Sellicks, Dec 2018)
- WSUD report (Sellicks, Dec 2018)
- Aboriginal & Historical Cultural Heritage Assessment (Past Traces, Dec 2018)
- Bushfire Risk Assessment (Blackash Pty Ltd, Dec 2018)
- Valuation report (Knight Frank, May 2018)
- Planning Report & SAC (Purdon Planning, Jun 2018)

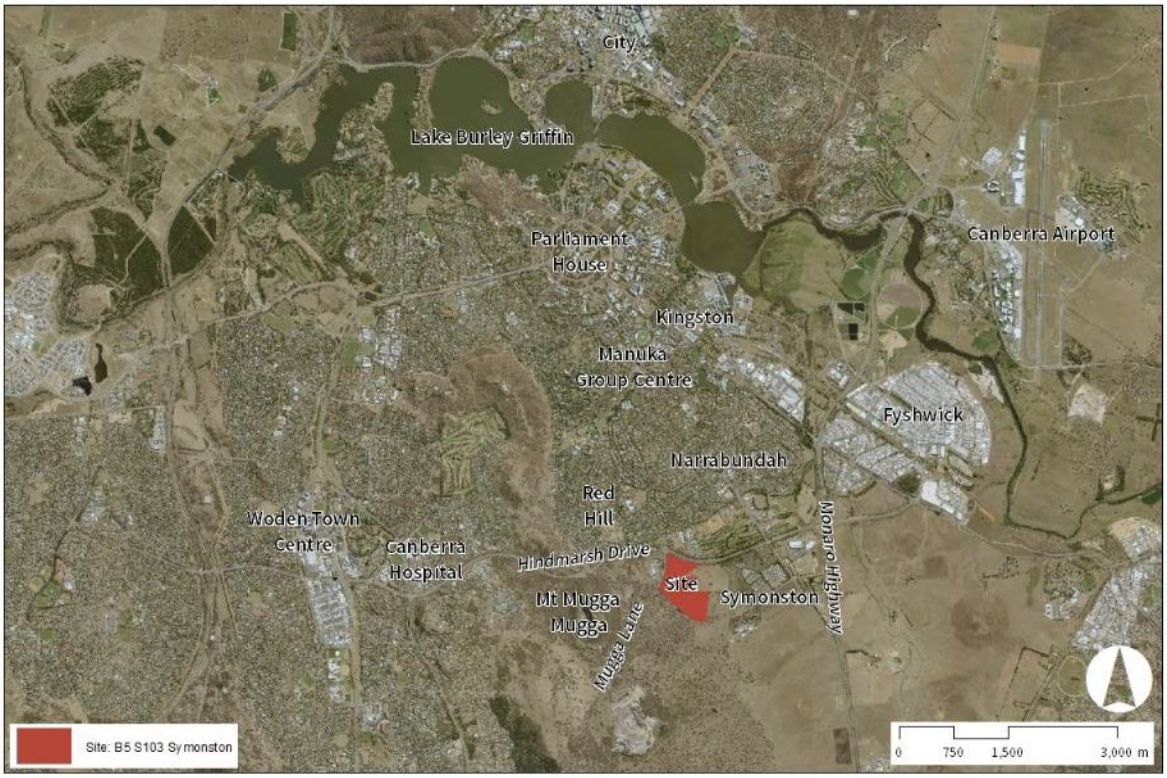
1.6 Previous Reports

The following table outlines all technical studies prepared for this submission. All studies were prepared specifically for the proposal by qualified individuals within the 18 months prior to lodgement.

Table 2: Previous Reports

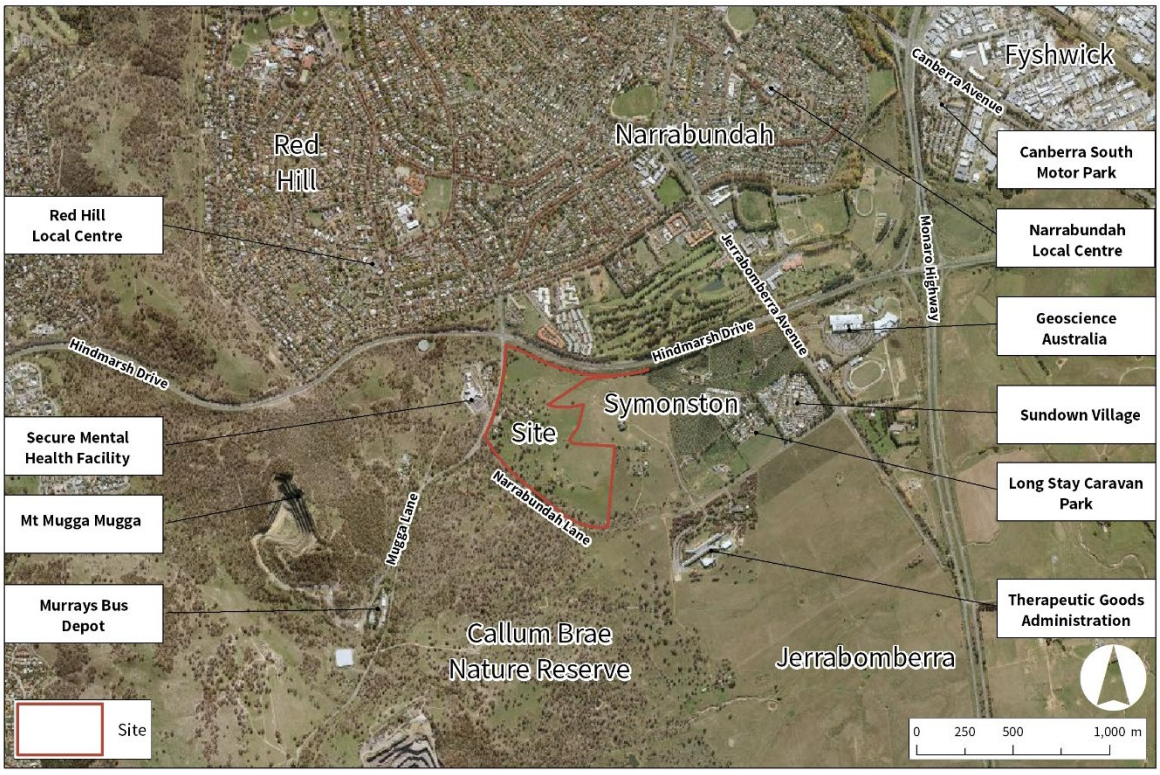
Title and Topic of Study	Author	Qualified Person	Date/Age	Directly related to proposal?	Public consultation Required?
Ecological Impact Assessment	Capital Ecology	Yes	September 2018 – 12 Months	Yes	No
Addendum to EIA	Capital Ecology	Yes	March 2018 – 18 Months	Yes	No
Driveway Crossover Plans Designs	Sellick Consultants	Yes	June 2018 – 15 Months	Yes	No
Traffic and Site Access Impacts	Sellick Consultants	Yes	December 2018 – 10 Months	Yes	No
Erosion and Sediment Control	Sellick Consultants	Yes	December 2018 – 10 Months	Yes	No
Water Sensitive Urban Design (WSUD)	Sellick Consultants	Yes	December 2018 – 10 Months	Yes	No
Aboriginal & Historical Cultural Heritage Assessment	Past Traces	Yes	December 2018 – 10 Months	Yes	No
Valuation Report	Knight Frank	Yes	May 2018 – 16 Months	Yes	No
Bushfire Risk Assessment	Blackash Pty Ltd	Yes	December 2018 – 10 Months	Yes	No
Planning Report and & SAC	Purdon Planning	Yes	December 2018 – 10 Months	Yes	No

Figure 1: South Canberra Context



Source: Purdon Planning, 2018 (ACTMapi 2017 aerial photo)

Figure 2: Local Area



Source: Purdon Planning, 2018 (ACTMapi 2017 aerial photo)

Figure 3: Subject Site

Source: Purdon Planning, 2018 (ACTMapi 2018 aerial photo)

2.0 Description of the Proposed Development

2.1 The Proposal

The proposed development is a subdivision of Block 5 Section 103 Symonston into eight (8) separate blocks each with the same lease purpose clause being agriculture with ancillary dwelling.

This development will require a surrender and regrant of the Crown Leases, the construction of new and upgraded driveway crossovers to access the subdivision, as well as minor road works and rural fencing.

The DA does not seek approval for any construction of residential dwellings or other structures. A future DA will need to be lodged if any additional structures are proposed post subdivision approval.

A formal survey plan will be prepared and lodged with the ACT Survey Office as a condition of development approval.

The EPBC Woodlands is not impacted as part of this proposal.

2.2 Project Objectives

The project aims to provide an opportunity for a small-scale agricultural land allotment which is rare in the ACT and is in high demand where it exists. The current lease is not fit for this purpose.

- The existing site is too small to continue livestock and other large-scale farming at a commercial scale
- The location of the site adjacent to an urban area with access to some services makes it ideal for higher order agricultural use
- Similar small-scale agricultural offerings elsewhere in the ACT (e.g. Pialligo) have resulted commercially successful operations
- The combined lease under a single title does not facilitate diverse management and the accompanying investment and innovation that could be generated through this development
- The residential component is necessary to allow an option for onsite living for prospective buyers for each new lease

Subdivision of the site into 8 holdings would facilitate small scale land holders to invest at a manageable scale in realising the potential of the land. This will result in a diverse and innovative agricultural precinct that will contribute to the ACT economy, strengthen the reputation and depth of the ACT's local culinary scene by providing local produce at commercial scales, and contribute to the employment-based objectives of the Eastern Broadacre Study.

These objectives can be achieved without causing significant adverse environmental impacts.

2.3 Justification

The proposed subdivision, Crown Lease variation and associated works are consistent with the objectives and principles of the National Capital Plan (NCP), Territory Plan (TP) and the Symonston Precinct Code (SPC).

The most significant attributes of the existing lease and the use of the site will remain unchanged, with no change to the purpose clause and allowable uses other than the number of houses per block (propose 1 dwelling per subsequent lease as part of the subdivision).

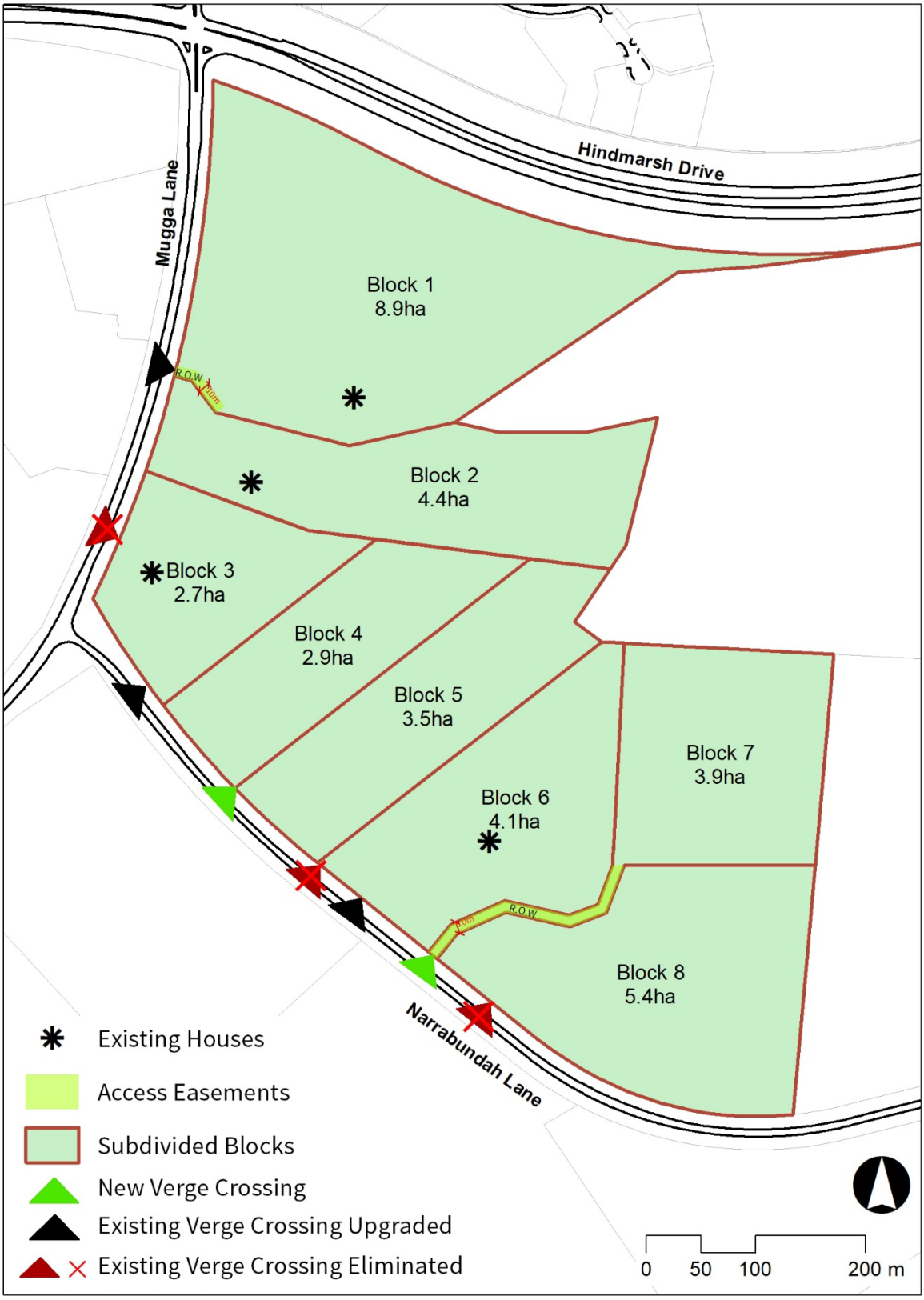
The subdivision design provides adjacent road access to all but two properties, where a right-of-way (ROW) access is proposed. The new properties range in size from 2.7 to 8.9 ha (subject to survey) and respect existing water courses. No native vegetation is disturbed in the subdivision.

The net effect of the proposed development will be a possible increase of four dwellings at some future stage, and provision for 3 horses per lease. Any additional dwellings beyond the existing four houses will be the subject of future (and separate) development approval by the Lessee(s).

It is not intended to upgrade existing utility service provisions other than to make provision for separate water and electricity metering to each property.

The proposed development will not fundamentally change the rural character of the area and will have no significant visual impact. There will also be no significant adverse impacts on surrounding land uses, heritage values, environmental values or traffic flow as a result of the lease variation.

Figure 4: Proposed Subdivision Plan



Source: Purdon Planning, 2019

3.0 Site Conditions

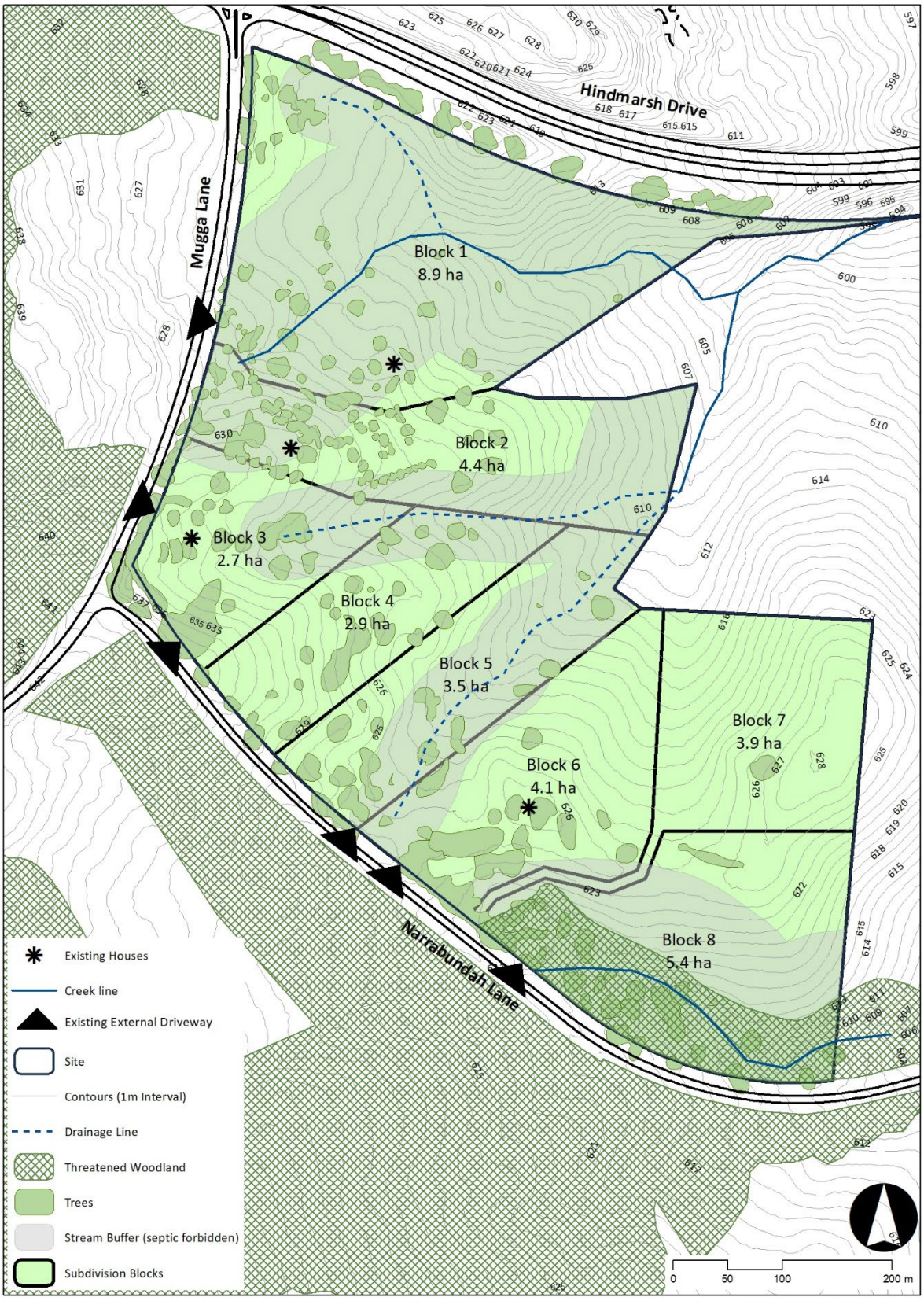
3.1 Summary

The following is a 'snapshot' of key site features. Additional details are provided in the following sections.

Location	The subject site is located between Hindmarsh Drive, Mugga Lane and Narrabundah Lane in Symonston.
Cadastral	Block 5 Section 103, Symonston, ACT.
Site area &Dimensions	Site area totals 357,905m^2 (35.8 hectares). The site has an irregular shape, with frontages of approximately 600m to Hindmarsh drive, 500m to Mugga Lane and 800m to Narrabundah Lane and an irregular edge to Blocks 1 & 6 on the eastern boundary.
Current Use	The site is currently occupied by a teaching farm including livestock handling and display facilities. It also contains four (4) approved residential dwellings. The majority of the land area is grazed by a variety of stock.
Adjacent Land Uses	The site is bordered on 3 sides by roads. The eastern boundary abuts two other farms including the historic Mugga Mugga homestead. North of Hindmarsh Drive are the suburbs of Narrabundah and Red Hill with residential areas, a golf course and a church located immediately opposite. To the west is a secure mental health facility, and correctional facility. To the south is the Callum Brae nature reserve and private leased land. Other land uses in the area include: two mobile home parks, AGSO, TGA, an animal pound and kennels, Murrays Bus Depot, and further afield the Mugga Lane waste disposal facility.
Topography and drainage	The site is undulating with a moderate fall towards the north east. A slight ridge runs along the southern edge of the site. Both sub-catchments on site drain into Jerrabomberra Creek and onward to Lake Burley Griffin via Jerrabomberra Wetland. There are several minor drainage lines and erosion gullies across the site (Figure 5 and Figure 6).
Access	The site has multiple access points off Mugga lane and Narrabundah Lane servicing the existing 4 residential dwellings and paddocks. There is no access off Hindmarsh Drive.
Easements	There is a sewer easement running across the northern third of the block with a single 4m wide corridor entering from the east splitting into three halfway across the block forming a trident shape.
Vegetation	The site contains a range of vegetation including some large native and introduced trees. Grassed areas on the site show evidence of long-term grazing, intensive pasture improvement, and other disturbance.
Endangered Ecological Communities (EEC)	The south-east corner of the site has a patch of critically endangered Box-Gum Woodland. This runs in a band about 80m x 350m from the eastern boundary along Narrabundah Lane.

Threatened Species	No threatened species have been identified as present on this site.
Heritage	There are no heritage-listed places or objects on this site. Recent heritage investigations (Past Traces, 2018) has identified 3 Aboriginal heritage sites (scarred tree; artefacts deposit & PAD) within Block 5 but none meet any of the criteria for listing to the ACT heritage Register. Mugga Mugga cottage on Block 6 to the east is a heritage listed site.
Bushfire Risk	The site is located within a declared 'Bushfire Prone Area' (ACTmapi).
National Capital Plan	This site is not in a National Capital Plan (NCP) designated area and it is not subject to any NCP regulations or overlays. Hindmarsh Drive is not a main avenue or approach route.
Territory Plan	The subject site is zoned as NUZ1 – Broadacre. There are no overlays on this site.
Crown Lease	The site is currently leased to Symcanfin Pty Ltd, with a Crown Lease that commenced on 27 June 2001 for a term of 99 years. A Land Management Agreement has been prepared for the current lessee.

Figure 5: Site Features & Proposed Subdivision



Source: Purdon Planning

3.2 Site Assessment and Development Proposal

3.2.1 Drainage & Water Quality

The subdivision plan is cognisance of existing landforms, drainage lines and vegetation including high value woodlands in the south east corner of the site. The plan ensures that possible future development will maintain environment quality in accordance with Territory requirements.

The subdivision pattern has been designed to ensure there is no impact to protected EPBC Woodland.

The site contains two gullies and several minor drainage lines (Refer Figure 6). There are no permanent water courses on the site. Both gullies remain entirely within a single block in the proposed subdivision plan.

While some proposed boundaries cross minor drainage lines, the subdivision has been designed to place the crossings high on the slope profile. These drainage lines rarely carry water in these areas and do not contain vegetation communities that are distinct from the surrounding landscape, suggesting their management needs are unlikely to be particularly specific.

Figure 6: Watershed Plan

Source: Purdon Planning

3.2.2 Natural Conservation Values

Capital Ecology Pty Ltd were engaged to undertake ecological surveys and prepare an Ecological Impact Assessment (EIA) to identify and assess the significance of the impacts that the proposed development may have upon the biodiversity values of the subject land and surrounds. The following tasks were undertaken by Capital Ecology:

- A desktop review of databases and relevant literature.
- Two field surveys on 23 August 2018 and 10 September 2018, to record and assess the ecological values of the study area, and to assess and map the vegetation and habitat for threatened species within the study area.
- The preparation of a Likelihood of Occurrence Assessment which addresses all threatened ecological communities, threatened flora species and threatened fauna species with the potential to occur within the study area.
- An assessment of the potential impacts, and the likely significance of these impacts, upon the listed significant biota identified as occurring or potentially occurring within the study area.
- Preparation of advice and recommendations regarding the impact avoidance, minimisation, mitigation, and/or offset measures that may be required to facilitate approval of the proposed subdivision by the ACT Government.

The study concluded that the area supports two ACT plant community types; *PCT-ACT01 Tablelands Tussock Grassland* and *PCT-ACT16: Yellow Box-Red Gum Tableland Grassy Woodland*. The study area was further categorised into five discernible Vegetation zones (refer Figure 7):

- PCT-ACT01 Tablelands Tussock Grassland
    - ACT01 Zone1 -ExoticDom – LowDiversity (Exotic Pasture)
- PCT ACT16: Yellow Box-Red Gum Tableland Grassy Woodland
    - ACT16 Zone1 -NativeDom – Canopy – Regen – Low-Mod Diversity (EPBC BGW)
    - ACT16 Zone2 -ExoticDom – Canopy - LowDiversity
    - ACT16 Zone3 -NativeDom – LowDiversity (Native Pasture)
    - ACT16 Zone4 -ExoticDom – LowDiversity (Exotic Pasture)

Zone 1 in the second community type (PCT ACT16) was determined to be consistent with the definition of the Box-Gum Woodland threatened ecological community as listed pursuant to the Commonwealth EPBC Act and ACT NC Act. This patch remains entirely within one block in the proposed subdivision for ease of management and is not affected.

No EPBC Act and/or NC Act listed threatened flora species were recorded within the study area. The study area has a low possibility of providing habitat for three EPBC and/or NC Act listed flora species, with a negligible chance for all others.

No EPBC Act and/or NC Act listed threatened fauna species were recorded within the study area. However, in addition to many common native birds, several EPBC Act and/or NC Act listed birds, and numerous other species considered conservation dependant in the region, may forage and potentially breed in the study area.

The feature of greatest potential habitat significance for these species is the remnant eucalyptus trees present on the site.

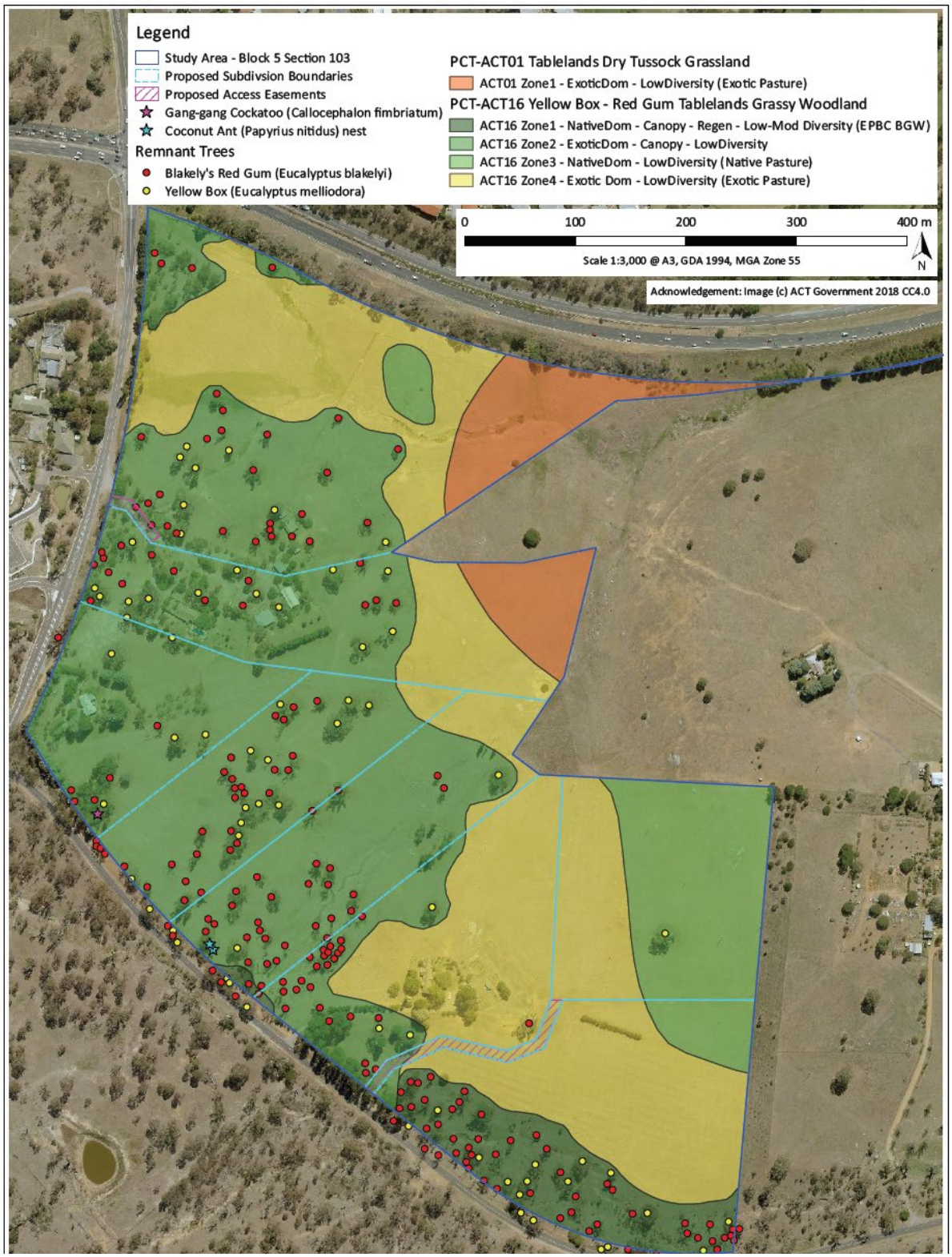
It has been advised by Capital Ecology that the ground storey currently present in Zones other than PCT-ACT16 Zone 1 are unlikely to support any listed species as they have been heavily modified and are closely grazed by domestic, feral and native animals.

The following provides a summary assessment against the key requirements outlined in the EPSDD G*uide to Preparation of an Application for an Environmental Significance Opinion.* This assessment is based on the information provided in the report by Capital Ecology:

- ***Existing Processes or Natural Systems of the ACT*** – The site is not considered important in maintaining existing processes or natural systems of the ACT. The area of the proposed works does not comprise places of importance to maintaining hydrological and nutrient cycles or to a species' life cycle processes of breeding, feeding, nursery and habitat. The local area provides some potential for habitat linkages facilitating species movements/migration routes and corridors. However, the proposed subdivision will not provide an additional impediment to the movement of local fauna. The subdivision and the associated construction of fences and driveways will not disturb habitat values.
- ***Richness of Diversity of Flora, Fauna or Landscapes*** – The site does not exhibit unusual richness of diversity of flora, fauna or landscapes. As described in the EIA, a total of 29 flora species were recorded comprising 12 native species and 17 exotic species. The habitat present across most of the site is considered unsuitable for many regional EPBC and/or NC listed birds and reptiles due to the lack of mid-storey and shrub storey vegetation, highly modified exotic ground storey, and the lack of moderately intact rocky habitat or other ground storey habitat features. This site is not considered to have a high or an "unusual" richness of species diversity.
- ***Uncommon, Rare or Endangered Flora, Fauna, Communities, Natural Landscapes or Phenomena*** – Details on flora and fauna are provided above.
- ***Principal Characteristics of Landscapes, Environments or Ecosystems –*** The site of the proposed subdivision is not considered to exhibit any special landscape or landform characteristics.
- ***ACT Natural History*** – Due to the high degree of habitat modification, it is considered that the site is not important having regard to the potential for the site to contribute to the wider understanding of the ACT's natural history, by virtue of its use as a research site, teaching site, type locality, reference or benchmark site.

Nature conservation values are further considered in the risk assessments conducted in Section 5.0 of this report. The risk assessments have been peer reviewed by Capital Ecology, and the risk scenarios discussed have been addressed by Capital Ecology in the EIA and the Addendum to the EIA, included with this submission.

Figure 7: Vegetation Survey Mapping



Source: Capital Ecology, 2018

3.2.3 Heritage Values

The site itself contains no heritage listed places or items (ACTmapi 2018), although it is adjacent to Block 6 Section 103 which contains Mugga Mugga homestead.

A recent study by PastTraces (2018) undertaken for this s211 submission has identified three Aboriginal heritage sites. These sites do not meet any of the criteria for listing to the ACT Heritage Register. However, the sites are protected under the *Heritage Act 2004* and can only be impacted with approval of the ACT Heritage Council.

Also, due to the proximity of the site to the homestead, there is a possibility that historical artefacts may be present on the site. However, the heavily modified nature of the site, with evidence of ploughing, heavy grazing and vegetation removal in many areas means these artefacts are unlikely to be present.

The study by Past Traces concluded that proposed subdivision was found to have no impact on any of these values. All three identified Aboriginal heritage sites have been avoided by the proposed works.

In the event that during construction additional values are discovered an unexpected discovery plan has been prepared. This plan lays out a procedure to ensure any unknown items are preserved if found.

3.2.4 Traffic & Site Access

A traffic impact assessment has been undertaken for the proposal and this s211 submission by Sellick Consultants and has concluded that the proposed development will not generate significant traffic flow to or from the site.

TCCS has been consulted as part of preliminary site planning. Future development resulting from the lease variation may, based on TCCS standards, generate eight (8) peak period vehicle trips per hour, the threshold for the requirement of a Traffic Management report (10) is not met.

The traffic report also confirms that revised site access/egress will not generate any safety concerns and will reduce traffic flow onto Mugga Lane. The existing site has two (2) “formal” driveways from Mugga Lane servicing 3 existing dwellings and one (1) “formal” driveway on Narrabundah Lane serving existing dwellings. There are also 3 farm gates on Narrabundah Lane. The DA proposes to reduce the number of driveway crossovers on Mugga Lane by one (1) with the remaining “common” driveway to serve two (2) existing dwellings on Blocks 1 & 2.

It is proposed to upgrade two (2) existing crossovers on Narrabundah Lane and create two new crossovers. Other farm gates will be removed.

The proposed subdivision will retain the same number of crossovers on Narrabundah Lane (total 4) to service six individual blocks. Each of the crossovers will be relocated or upgraded (Figure 4).

3.2.5 Agricultural uses

The proposed Crown Lease purpose clause retains "agriculture" as the primary use with one dwelling per block. Agriculture is defined in the lease as follows:

> *"Agriculture" means broadacre animal farming, crops and pasture production, and horticulture for commercial wholesale production, but does not include animal husbandry or any cultivation or animal farming carried out primarily for the personal enjoyment of, or consumption by, the owner(s) or occupant(s) of the land;'*

The size of individual blocks proposed in the subdivision will not prevent the use of the land for "agricultural" purposes as defined in the lease.

Examples of agricultural uses for "commercial" purposes that could be feasible on the proposed blocks include a variety of forms of horticulture, floriculture, vegetable production, orchards and the like. These uses are discussed in more detail below:

Horticulture:

Many hand-harvested high-yield vegetables deliver yields that make them commercially viable on blocks of this size. Small scale operations generally succeed by specialising in heritage varieties or specialty products that focus on a local market. Examples of labour-intensive vegetables that grow well on a small scale in Canberra's climate include:

Garlic
Onion
Specialty tomatoes
Asparagus
Capsicum

(Sources: NSW DPI – Horticulture gross margin budgets, Profitable Plans Digest; The best specialty crops for small growers).

Floriculture:

Flowers often require much more careful tending than large scale crops and lend themselves to small farms. While many of the mainstream flower varieties (roses, tulips) are dominated by large growers, more niche products like the following may be viable:

Lavender
Willow
Foliage for decorative arrangements (e.g. Ferns, cherry blossom sticks)
Edible flowers (for the fine dining industry)

There are examples of flowers being commercially viable on farms as small as 2 acres (0.8 hectares) far smaller than the smallest blocks proposed.

(Sources: ABC - Australian slow flower movement blooming fast as consumers catch on to 'grown not flown' message, Profitable Plans Digest; The best specialty crops for small growers)

Other agricultural uses:

Other examples of broadacre commercial production that has the potential to be viable on small blocks such as these include:

Bee Keeping (apiary)
Free range animal farming- (for example meat rabbits)
Vineyards
Orchards

As bees are free to move, bee keeping operations can be commercially viable with operational areas as small as a house block. Vineyards for wine production can be viable on sites as small as 5 acres (2 hectares).

(Sources: Australian Government, RIRDC, Commercial Beekeeping in Australia)

Impacts of agricultural uses:

None of the uses listed above require any clearing of canopy trees to take place on any or all the eight (8) sites. For many of the possible uses, such as bee keeping and free-range animal farming, remnant vegetation is an asset as it provides flowers and shade. In most parts of the site the understory is highly modified, with exotic improved pasture, so a switch to another agricultural use would not have a significant impact.

However, some uses, such as vineyards or orchards may generate some clearing on the site, and in the worst possible conditions may involve a leaseholder seeking to clear a block of most or all native vegetation in order to construct green houses or other agricultural infrastructure. Such an action (construction of new structures) would require separate Territory approval by way of DA. Furthermore, if any other Schedule 4 item under the *Planning & Development Act 2007* which have not been considered in this s211 report were proposed, then these would also require further DA from the Territory Government via an assessment process. Any native vegetation clearing actions is considered a cumulative impact for the purpose of the s211 assessment, and as such has been addressed in 5.4 of this report.

3.2.6 Residential Dwelling Sites

This DA does not include any application for construction of dwellings or other structures. However, the subdivision layout has been designed to ensure there is ample space on each block to site a house and its associated curtilage without impacting any ecological or heritage values.

The EPA mandates a 100m buffer along creeks and waterways and a 40m buffer around minor drainage lines as exclusion zones for the installation of septic tank systems outside these buffer zones (refer Figure 5).

The subdivision plan considers this, it also considered the general amenity of future residents, including future service connections, house sites and internal access driveways.

3.2.7 Bushfire Risk

The site is located within a bushfire prone area. However, the site is serviced by town water supply, has sealed road access for fire trucks from three (3) sides, and is close to an existing rural fire service depot. In addition, the site's understorey has been intensively managed for many years and contains low fuel loads.

A Bushfire Risk Assessment has been undertaken by BlackAsh for the existing dwellings and four hypothetical dwellings that may be constructed as a result of the subdivision. It determined that a bushfire asset protection zone of 20m should be maintained around current and future dwellings on the site.

No clearing of trees or other vegetation will be required to achieve this standard. This is because the entirety of the current site is currently at or below the fuel load standards of an asset protection zone, due to heavy grazing and the lack of under and middle storey vegetation.

As such, no impacts on environmental or other values will be required to ensure bushfire management standards are met by future development.

Bushfire management measures can also be included in the future Land Management Agreements (LMAs) for the subdivided sites.

3.2.8 Waste Disposal

Existing arrangements for waste collection services will be retained. If any new dwellings are proposed, then approval for alternate or amended waste disposal systems/locations will need to considered as part of a future DA to the Territory.

3.2.9 Utility Services

No changes are proposed to existing services other than separate water and electricity meters to each block.

3.2.10 Site Contamination

The site is not recorded on the register of contaminated sites under section 21(A) of the *Environment Protection Act 1997*.

4.0 Statutory Context

This section outlines key elements of Commonwealth and ACT legislation relevant to the proposed development.

4.1 Commonwealth EPBC Act 1999

Under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), actions that have, or are likely to have, a significant impact on a Matter of National Environmental Significance (MNES) require approval of the Commonwealth Minister for the Environment and Energy. Approval from the Commonwealth is in addition to any approvals under ACT legislation.

Based on the assessment presented in the attached EIA (refer separate report), it is concluded that, with the implementation of the proposed measures to avoid, minimise and mitigate impacts upon biodiversity values, the proposed development is unlikely to significantly impact upon any MNES as listed pursuant to the Commonwealth EPBC Act, and therefore referral of the proposed action to the Commonwealth Minister for the Environment is unwarranted.

The works under the current DA do not trigger the requirement for a referral under the EPBC Act. If future clearing of EPBC matters is proposed a referral under the EPBC Act will be required.

4.2 Australian Capital Territory (Planning and Land Management) Act 1988

The *Australian Capital Territory (Planning and Land Management) Act 1988* (PaLM Act) establishes the National Capital Authority (NCA) and the National Capital Plan (NCP).

4.2.1 National Capital Plan

The National Capital Plan applies to land within Designated Areas. The National Capital Authority have confirmed that this site is not within a Designated Areas. A Works Approval will not be required for the subdivision.

National Capital Authority Works Approval is not required for this development

4.3 Nature Conservation Act 2014

The *Nature Conservation Act 2014* makes "provision for the protection and conservation of native animals and native plants, and for the reservation of areas for those purposes".

The following two ecological communities are listed as endangered pursuant to the ACT NC Act.

> Natural Temperate Grassland – No part of this study area supports the NC Act listed Threatened Ecological Community (TEC). Those parts identified as having once supported natural grassland are extremely modified and do not contain the necessary native vegetation to qualify them as NC native grassland.
>
> Yellow Box – Blakely's Red Gum Woodland – Zone 1 is identified in the EIA as meeting the criteria for this community under the NC Act.

The proposed works are considered to be consistent with the provisions of the Nature Conservation Act, provided that the proposed avoidance, minimisation and mitigation measures are implemented.

4.4 Heritage Act 2004

The *ACT Heritage Act 2004* outlines provisions for places or objects to be determined as having heritage significance.

No Aboriginal or historical heritage sites or areas of Potential Archaeological Deposit (PAD) were identified within the project area from the desktop review. However, based on a site visit with Representative Aboriginal Organisations (RAOs) a total of three sites were identified including a possible scarred tree (subject to arborist assessment) and small artefact scatter, and a PAD. As discussed in section 3.2.3, the assessment by Past Traces concluded that none of these items will be impacted by the proposed development.

The proposal is consistent with the provisions of the Heritage Act 2004.

4.5 Tree Protection Act 2005

The *Tree Protection Act 2005* outlines provisions for 'Protected Trees' which include:

Registered Trees - are trees on the 'Tree Register' that have been identified as being exceptional for natural or cultural heritage values; landscape and aesthetic values; or scientific values

Regulated Trees - located on leased Territory land in an area declared as a Tree Management Precinct and is either:

- 12m or more in height; or
- greater than 1.5m in circumference (approx. 0.5 m in diameter) or more at 1m above ground level; or
- with two or more trunks and the total circumference of all the trunks, 1m above ground level, is 1.5m or more; or
- 12m in crown width or more.

The Act applies to land within a "Tree Management Precinct". The subject site is outside a tree management precinct and therefore, the provisions of the Act do not apply.

The provisions of the Act do not apply to the subject site. Notwithstanding this, no trees that would meet the definition of a protected tree (regulated or registered) are affected by Subdivision and associated works.

4.6 Environment Protection Act 1997

Under Schedule 1 (Section 1.2) of the *Environment Protection Act 1997* (EPA Act), the proposed works do not trigger the requirements for Environmental Authorisation from the Environment Protection Authority.

The proposal is consistent with the provisions of the Environment Protection Act 1997.

4.7 Water Resources Act 2007

Under Section 42 of the *Water Resources Act 2007*, the carrying out of a "waterway work" (constructing or altering a water structure; or doing other work in or on a waterway) requires a licence. This includes situations where infrastructure or utility services cross a waterway.

A "Waterway" is defined as the bed that the water in the waterway normally flows over or is covered by, and the banks that the water in the waterway normally flows between or is contained by. However, waterway does not include land normally not part of the waterway that may be covered from time to time by floodwaters from the waterway. As such, the existing overland flow paths would not be considered waterways.

There is no requirement for any "waterway works" as part of the project, as such; the proposal is consistent with the provisions of the Water Resources Act 2007

4.8 Pest Plants and Animal Act 2005

A species may be declared a pest species under the *Pest Plants and Animal Act 2005*. Under the Act, weed species are defined by declaration of the Minister.

Seventeen exotic plant species were recorded within the study area during the survey. Whilst the majority of the exotic species are common and/or considered low-risk species in the ACT and region, the following species are listed as Weeds of National Significance (Commonwealth) and/or as pest plant species in the ACT:

Paterson's Curse *Echium plantagineum*
African Love Grass *Eragrostis curvula*
St John's Wort *Hypericum perforatum*
Serrated Tussock *Nassella trichotoma*
Radiata Pine *Pinus radiata*
Orange Firethorn *Pyracantha angustifolia*
Briar Rose *Rosa rubiginosa*
Blackberry *Rubus fruticosis*
Blue Periwinkle *Vinca major*

Six exotic fauna species were recorded during the field survey;

European Rabbit *Oryctolagus cuniculus*
Red Fox *Vulpes vulpes*
European Brown Hare *Lepus europaeus*
Common Myna *Acridotheres tristis*
House Sparrow *Passer domesticus*
Common Starling *Sturnus vulgaris*

Each of these species is commonly encountered on such peri-urban sites, however the rabbit infestation is relatively severe with several active warrens observed along the drainage line in the north of the study area. Control of these rabbits via warren fumigation will occur prior to sale of the newly created blocks.

The proposed works are considered to be consistent with the provisions of the Pest Plans and Animals Act, provided that the proposed avoidance, minimisation and mitigation measures are implemented.

4.9 ACT Planning and Development Act 2007

The ACT *Planning and Development Act 2007* defines 'development' and sets out circumstances where development may be exempt from the need to gain development approval. Where development approval is required, the P&D Act establishes assessment tracks (i.e. Code, Merit, Impact) for the assessment of any development approval (DA).

4.9.1 Territory Plan

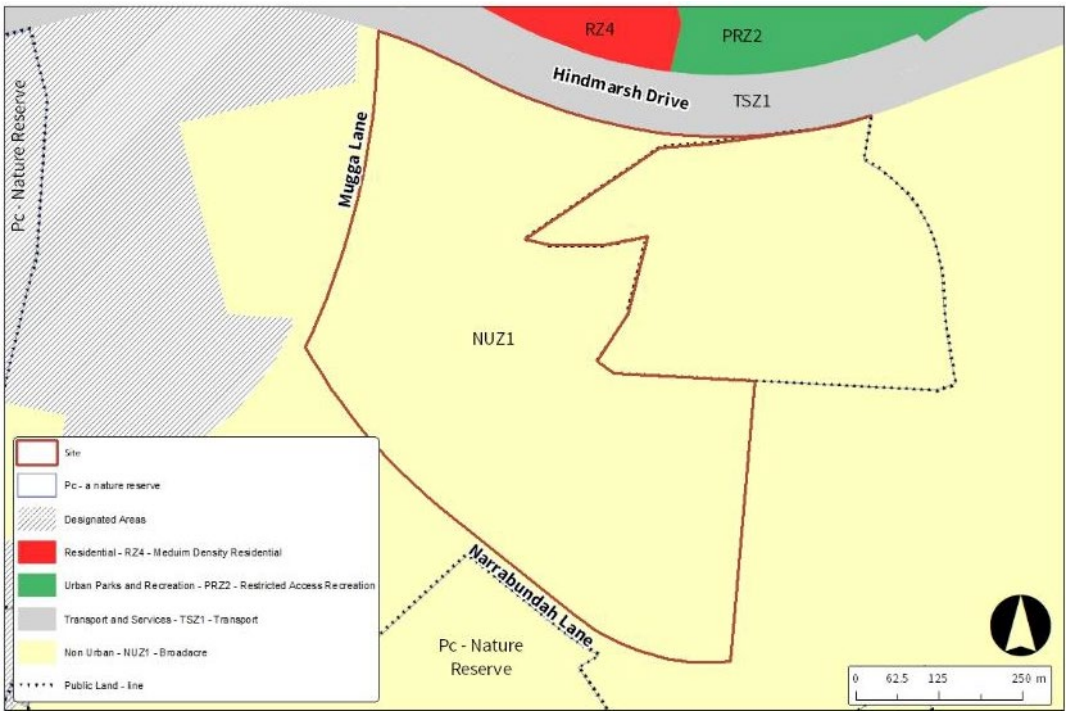
The subject site is currently zoned as NUZ1 – Non-Urban Broadacre Zone (Figure 7). The objectives of the zone are as follows:

Zone Objectives

- *a) Make provision in a predominantly rural landscape setting for a range of uses which require larger sites and/or a location outside urban area*
- *b) Make provision for activities requiring clearance zones or protection from conflicting development*
- *c) Ensure that development does not adversely impact or visually intrude on the landscape and environmental quality of the locality*
- *d) Ensure, where appropriate, that development and the use of land does not undermine the future use of land which may be required for urban and other purposes*

The proposed lease variation and subdivision is consistent with the objectives of the NUZ1 zone. The proposed primary use will remain agricultural with an ancillary residential dwelling on each block. Agricultural uses are not suited to an urban setting. Agricultural management has low environmental and visual impacts and represents a continuation of the current land management practices. The proposed use will not impact the potential future use of the land.

Figure 8: Territory Plan Extract



Source: ACTmapi

4.9.2 Symonston Precinct Map and Code

The site is subject to additional Territory Plan requirements under the Symonston Precinct Map and Code.

The subject site is located within the RC2 area and is subject to the restrictions of MT2 (Merit Track) and PD2 (Prohibited Development)

There are several relevant provisions from the Symonston Precinct Code that affect the subject site.

Table 1 summarises Element 2 of the Code referring to potential **subdivision**, noting that there is no mandatory rule preventing subdivision.

Table 2 outlines **permitted uses** for the site under the NUZ1 Zoning and the Symonston Precinct Map and Code. Items *underlined* in the table are relevant to the proposed development.

Based on the above, it is concluded that the actions and uses included in this application are all allowable within the precinct.

Table 3: RC2 Mugga Lane Rural Area

Element 2: Site	
2.1 Subdivision	
There is no applicable rule.	C3 Subdivision of existing leases is generally not permitted.
Comment: C3 Makes provision for ACTPLA to consider subdivision of the site under certain circumstances on a merit based assessment. Pre-application discussion with ACTPLA confirmed in-principle support for subdivision subject to the following conditions: - *No major increase in development density* - *No increase in verge crossings* - *Subdivision to respect landform and drainage patterns* - *Retention of agricultural purpose for the land*	

Table 4: Permissible Uses (with consent)

agriculture	*minor road*
ancillary use	*minor use*
animal husbandry	nature conservation area
consolidation	outdoor recreation facility
demolition	parkland
development in a location and of a type identified in a precinct map as additional merit track development	service station
	sign
educational establishment	*subdivision*
farm tourism	temporary use
major road	*varying a lease (where not prohibited, code track or impact track assessable)*

4.9.3 EIS Triggers

Under Clause 123 of the ACT *Planning and Development Act 2007*, developments listed in Schedule 4 are development proposals likely to have significant adverse environmental impacts which could potentially trigger an EIS.

This proposal triggers the following Schedule 4 Item:

- ***Part 4.3 Development proposals requiring EIS—areas and processes Item 2***: *the clearing of more than 0.5ha of native vegetation in a native vegetation area*

While the proposal does not propose the clearing of any native vegetation, future development resulting from the subdivision may lead to multiple lessees separately clearing in excess of 0.5 hectares of native vegetation which would result in a cumulative impact. This impact is considered as part of cumulative impact scenario in Section 5.4.

This s211 submission concludes that:

- There is sufficient information provided to identify and assess the impacts of the proposed activity on the environment
- Possible future clearance of native vegetation is unlikely to have a significant ecological impact given the location of the site adjacent to much larger geographic areas of woodland habitat (Callum Brae and Mount Mugga) and removal of vegetation can be controlled by the introduction of a range of mitigation measures (detailed below).
- Proposed mitigation measures can prevent the cumulative impacts from occurring.

These conclusions are based on the following considerations:

- The thoroughness of the Ecological Impact Assessment and Heritage Report, including the appended documents
- The low-to-moderate impacts are assessed in Section 5.0.
- The mitigation measures are detailed in Section 6.0.

An exemption under s211 of the *Planning & Development Act 2007* from the requirement for an EIS is therefore sought on the grounds that the impact of the proposed development has been sufficiently addressed in relevant studies and the commitment by the Proponent to implement appropriate mitigation measures, to ensure the proposal is not likely to have a significant adverse environmental impact.

4.10 Eastern Broadacre Study

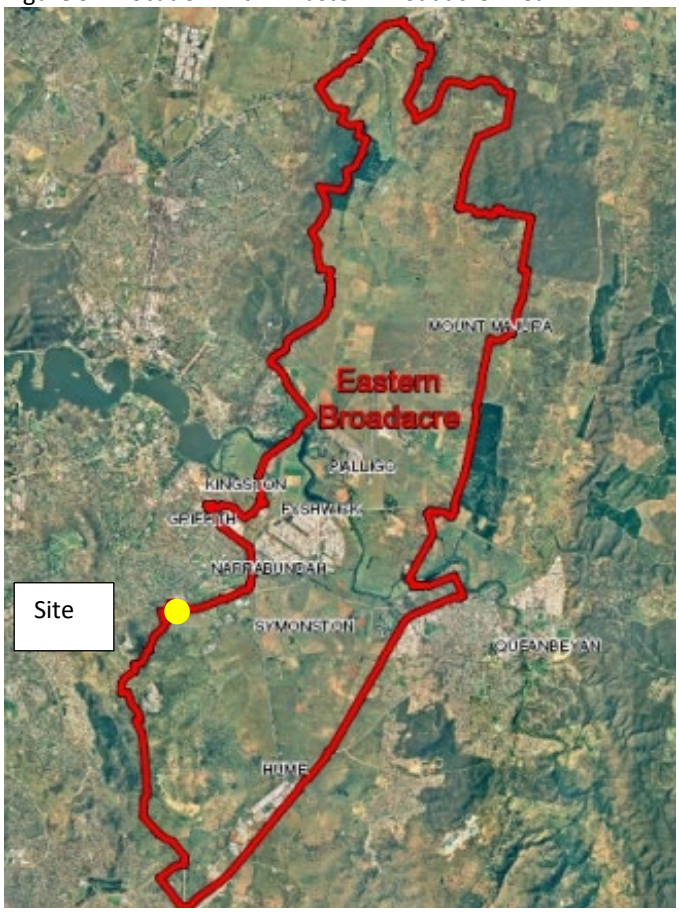
The Eastern Broadacre Study was released in 2010 and investigated the suitability of a corridor stretching from Mt Majura to the Hume industrial area for employment generating development.

The subject site was studied as part of the "Mugga Precinct". The study noted that previous studies, including the Canberra Spatial Plan, had identified the area north of Narrabundah Lane as potentially suitable for institutional, office, or warehouse use.

The study concluded that the Mugga Precinct could be developed to provide "employment, tourism and recreational opportunities that are unlikely to cause significant land use conflict with current or future uses." It is understood that the site and surrounding Mugga Precinct is part of the land that is currently subject to strategic assessment under the EPBC Act.

The proposed subdivision will not impede use of the site for a range of other permitted uses either on individual blocks or with subsequent consolidation.

Figure 9: Location within Eastern Broadacre Area



4.11 ACT Planning Strategy 2018

The ACT Planning Strategy 2018 makes mention of the Eastern Broadacre study but without specific reference to the subject site. It is noted that Eastern Broadacre is intended to include a range of industrial uses on flat land.

The subject site is located on the western side of the study area (refer Figure 9) and would not be readily suitable for large scale industrial uses because of its undulating topography and proximity to established residential areas. However, the proposed subdivision is not regarded as restricting medium to larger scale land uses.

5.0 Risk Assessment

This section assesses risks to environmental values posed by development scenarios resulting from this subdivision. The risk assessment has been conducted using EPSDD methodology with input from the project team, including Capital Ecology.

5.1 Risk Scenario Summary

Purdon Planning consider there to be two (2) risk scenarios that can result from development on the site. Each of these scenarios are addressed in more detail later in the report, and where appropriate are subject to in depth risk assessment.

It should be noted that this assessment does not consider scenarios which would require a lease variation (change of land use) beyond the scope of this DA, or a Territory Plan variation.

Table 5: Risk Scenario Summary Table

Scenario		Summary
1	Proposed development direct impacts (Section 5.3)	Very minor impacts resulting directly from the actions of the development approval. These actions are limited to the re-alignment of driveway entries, and the installation of farm fences between the new blocks. Any additional actions or changes to land management policy require consent from the Territory. The risks posed by these actions were not considered significant enough to warrant a full risk assessment.
2	Cumulative Impacts from further actions that can occur only with future DA or ESO assessment (Section 5.4)	This scenario addresses those impacts associated with future Lessee's potentially clearing in excess of 0.5 hectares of native vegetation on each block causing cumulative environmental impacts on the site. The potential significant risks posed by such actions are considered in this assessment.

5.2 Risk Assessment Methodology

A *Request for Exemption to Provide an Environmental Impact Statement* under Section 211 of the P&D Act requires a Preliminary Risk Assessment (PRA) to be undertaken in a manner consistent with the guidance document *Preparation of an Application for Scoping - Preparation of an Application for an Environmental Significance Opinion* produced by EPSDD.

The elements used to perform the PRA are shown in the tables below:

- risk assessment (**likelihood** of impact) (Table 6)
- risk assessment (**consequence**) (Table 7)
- risk assessment matrix (**likelihood and consequence**) (Table 8)

Table 6: Risk Assessment Matrix (Likelihood of Impact)

Likelihood	Description	Probability	Community attitude
Remote	May occur, but only in exceptional circumstances	<1%	Few people interested
Unlikely	Not expected to occur in most circumstances	1-20%	Some people affected
Possible	May Occur	21-49%	Many people affected
Likely	Probably will occur	50-85%	Most people affected
Almost Certain	Expected to occur	>85%	Almost everyone affected

Source: Preparation of an Application for an Environmental Significance Opinion (EPSDD) – Table 1

Table 7: Risk Assessment Matrix (Consequence – example only)

Consequence	Minimal	Minor	Moderate	Major	Catastrophic
Magnitude					
Spatial	A single pool	A reach or river or part of a catchment	Multiple reaches or whole catchment	Multiple catchments	Whole of basin
Intensity	Low level behavioural, lifespan or condition effect	Acute impacts on some species	Moderate impacts on growth, recruitment or survival rates	Lethal impacts on some species	Lethal for individuals or communities
Temporal					
Duration	Single incident or transient event	Short term impact, single generation	Medium term	Long term, multiple generations	Permanent
Timing	Occurs outside breeding times	Occasional interruption of feeding or breeding	Interrupts one life cycle	Regularly interrupts life cycle	Permanent interruption of life cycle
Ecological					
Values	Previously disturbed areas	Parkland	Nature conservation area	Conservation area, listed species or other conservation feature of ACT significance	Wilderness, nationally threatened species or other conservation feature of national significance
Sensitivity	Will recover completely	Will recover with some changes	Moderate change to ecosystem functioning	Significant change to ecosystem functioning	Will not recover
Social					
Number of people	Some people indirectly impacted	Some people directly impacted or several indirectly	Several people directly impacted or many indirectly	Large number of people directly impacted	Loss of life
Heritage	Impact on item of minimal significance	Impact on multiple items of low significance	Impact on significant item	Impact on multiple significant items	Major impact on protected item
Political	Single negative press article	Multiple negative press articles	Significant public interest	Leads to an inquiry	Change of government
Economic	Minimal losses	Several thousand dollars lost revenue or remediation costs	Half million dollars in lost revenue or remediation costs	One million dollars in lost revenue or remediation costs	Several million dollars in lost revenue or remediation costs

Source: Preparation of an Application for an Environmental Significance Opinion (EPSDD) – Table 1

Table 8: Risk Assessment Matrix (Combined Likelihood and Consequence)

Consequence	Minimal		Minor	Moderate	Major	Catastrophic
Likelihood						
Remote	Negligible		Negligible	Very Low	Low	Medium
Unlikely	Negligible		Very Low	Low	Medium	High
Possible	Very Low		Low	Medium	High	Very High
Likely	Low		Medium	High	Very High	Significant
Almost Certain	Medium		High	Very High	Significant	Significant

Source: Preparation of an Application for an Environmental Significance Opinion (EPSDD) – Table 4

5.3 Proposed Development Risks

This section assesses the risk to environmental values that is posed ONLY by the works directly included in or permitted by the proposed Subdivision DA, including:

- Reconfigured access driveways
- Fences dividing the eight blocks

It should be noted that the Subdivision DA does not include the construction or demolition of any dwellings or any other structures.

Cumulative impacts from the proposal are considered in Section 5.4 below.

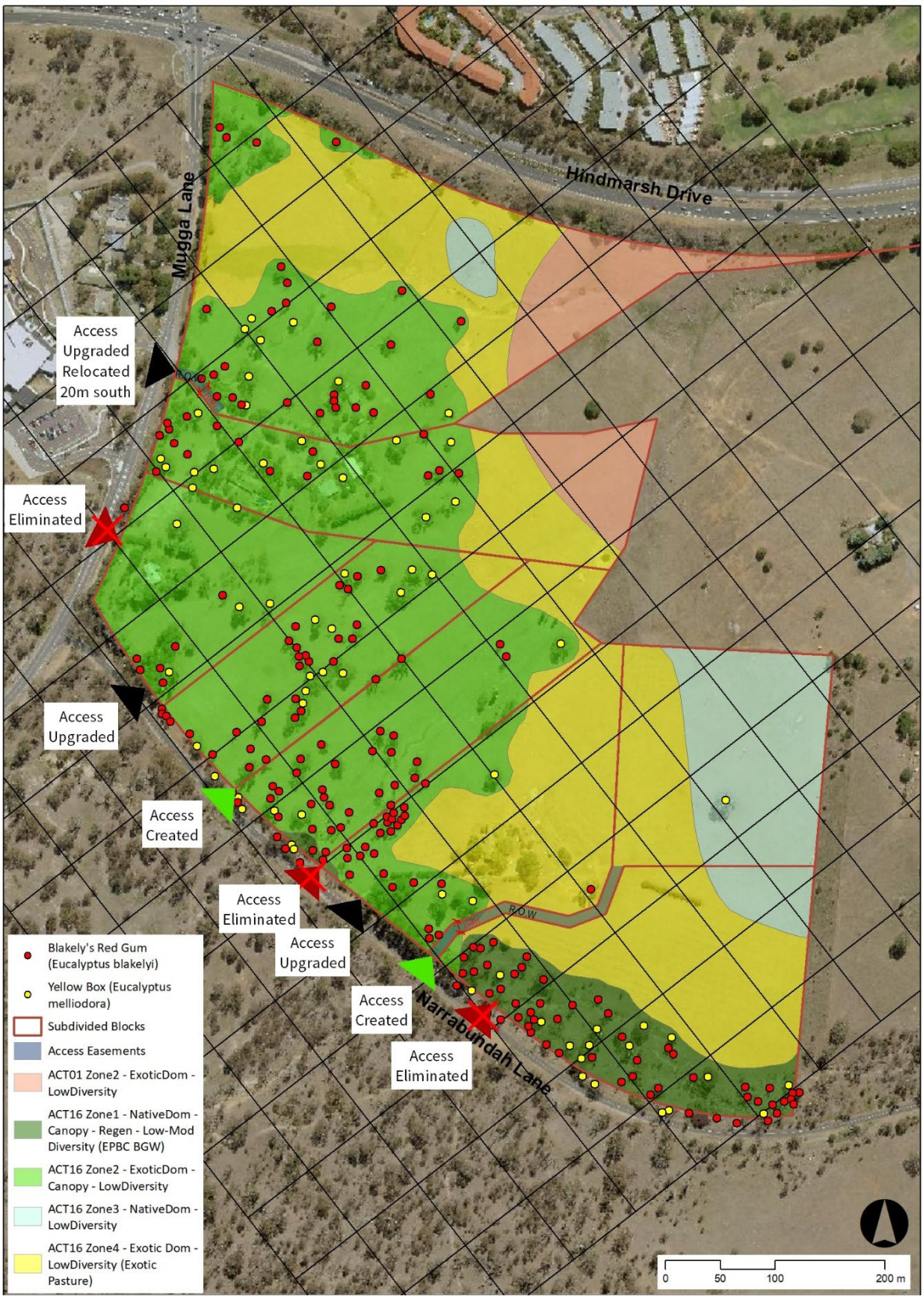
Due to the very minor direct impact of these actions, a full risk assessment is not considered warranted. An overview of impacts to each element identified in the other risk assessments is provided below:

Table 9: Impacts of Proposed Development

Loss of threatened ecological community	No impacts from the proposal; no works proposed in the area containing threatened ecological communities.
Loss of habitat of threatened species	No impacts from the proposal; works will not impact any identified habitat values.
Loss of fauna	No impacts from the proposal; works will not impact any identified fauna habitat values.
Impacts on Migratory Fauna	No impacts from the proposal; works will not impact any identified habitat values for migratory fauna.
Loss of Rare and Uncommon Flora	No impacts from the proposal; works will not impact any areas that may contain Rare or Uncommon Fauna.
Loss of 'Native Vegetation'	No impacts from the proposal; works will not impact any areas that contain native ground cover. Works do occur in areas with native canopy; however, the works do not impact any native trees.
Weed invasion	Minor impact from the proposal; site is already significantly infested with weeds so likelihood of new species colonising the site is low. Exiting management regime will continue. Subdivision will be subject to conditions of new Land Management Agreement (LMA).
Loss of Aboriginal Cultural Heritage Items	No impacts from the proposal; works will not impact any areas that contain artefacts or scar trees.
Loss/Damage to Historical Item	No impacts from the proposal

Traffic / Access Impacts	Minor impacts from the proposal; Initial subdivision will not increase traffic to the site. Access changes have been implemented at the suggestion of TCCS and will reduce impacts on Mugga Lane.
Water contamination	No impacts from the proposal; no changes to land use, minimal ground disturbance.
Erosion and Sedimentation	Minor impacts from the proposal; minor ground disturbance around proposed driveways. Driveway designs consider drainage arrangements.
Impact on Waterways	No impacts from the proposal; no changes to land use, no new crossings over waterways.
Bushfire	No impacts from the proposal; no changes to land use, no fire sensitive assets proposed.
Air quality	No impacts from the proposal; no changes to land use.
Noise	No impacts from the proposal; no changes to land use.
Visual Impact	No impacts from the proposal; no changes to land use.
Soil contamination	No impacts from the proposal; no changes to land use.

Figure 10: Native Vegetation



source: Purdon Planning, Capital Ecology 2018

5.4 Cumulative Impacts Risk Assessment

This section assesses the risk to elements of the environment that is posed by hypothetical actions that may occur due to events set in motion by the subdivision DA. It should be noted that actions discussed in this section would require separate approval from EPSDD and in many cases would require EPBC referral before they could take place, however, for completeness they have been assessed as part of this report.

Note, this assessment does not assess any triggers outside of Schedule 4, Part 4.3, Item 2; *the clearing of more than 0.5ha of native vegetation in a native vegetation area*. For example, it does not consider the EPBC Box Gum Woodland as it is not a triggered Schedule 4 Item in this proposal.

This assessment is based on the risk assessment matrix and process adopted by EPSDD, and further advice provided by Capital Ecology (see *Addendum to EIA* attached).

The cumulative impacts discussed in this section considers the removal native vegetation, including native grasses and trees, from the site, resulting in a complete loss of ecological values.

Examples of scenarios that might prompt this sort of outcome would be a leaseholder or leaseholders who desired to completely occupy the site with an agricultural use consistent with the crown lease and zoning. This might include uses such as vineyards, olive groves or horticulture involving large scale green houses and terracing of the site (see Section 3.2.5). Figure 11 Shows part of a site in the same section of Symonston which gives an example of what this development might look like on the landscape.

This scenario does not include uses that would requiring a re-zoning or variation to the Symonston Precinct code, such as residential, industrial, or animal husbandry uses (such as a feed lot).

This scenario would require the following to take place before it could occur:

- ACT Government development approval(s) as required by the lease that permit the removal of vegetation.
- Variations to the Land Management Agreements across the eight sites to permit clearing.
- Environmental Significance Opinions or further EIS processes on each of the sites that determine that there are no significant impacts from clearing more than 0.5ha of native vegetation.

Figure 11: Olive Grove Agriculture – Symonston ACT

Source: Nearmap (2019)

5.4.1 Risk Assessment Summary

This section provides the outcomes of an assessment of likelihood, consequence and risk associated with the cumulative impacts on ecology and other environmental factors for the subject site, where native vegetation is cleared. This assessment uses the model identified from *Preparation of an Application for Scoping - Preparation of an Application for an Environmental Significance Opinion*.

Table 11 summarises the risk assessment for impacts identified with the cumulative scenario.

The risk assessment draws on third party reports, studies and assessments that have been commissioned by the Proponent in relation to the proposed development and are attached to this submission. The cumulative scenario is specifically addressed in an addendum provided by Capital Ecology (see *Addendum to EIA* attached).

This assessment concluded that this development could result in substantially higher risk impacts than under the proposed development scenario. As such this risk assessment identifies a range of **mitigation measures** that would further minimise impact of the proposed and possible actions on the site. These are described in detail in section 6.0 of this report.

This assessment is taken prior to the implementation of mitigation measures, Section 7.0 revisits the risk assessment after mitigation measures have been implemented.

Table 10: Cumulative summary Risk Assessment

No.	Potential Impact	Risk Assessment		
		Likelihood	Consequence	Risk prior to mitigation
1	Loss of threatened ecological community	Remote	Major	Low
2	Loss of habitat of threatened species	Likely	Major	Very High
3	Loss of fauna	Likely	Moderate	High
4	Impacts on Migratory Fauna	Unlikely	Minimal	Negligible
5	Loss of Rare and Uncommon Flora	Unlikely	Moderate	Low
6	Loss of 'Native Vegetation'	Almost Certain	Major	Significant
7	Weed invasion	Likely	Minor	Medium
8	Loss of Aboriginal Cultural Heritage Items	Almost Certain	Moderate	Very High
9	Loss/Damage to Historical Item	Remote	Minimal	Negligible
10	Traffic / Access Impacts	Unlikely	Minor	Very Low
11	Water contamination	Possible	Minor	Low
12	Erosion and Sedimentation	Almost Certain	Moderate	Very High
13	Impact on Waterways	Almost Certain	Minor	High
14	Bushfire	Unlikely	Moderate	Low
15	Air quality	Almost Certain	Moderate	Very High
16	Noise	Likely	Minimal	Low
17	Visual Impact	Almost Certain	Minimal	Medium
18	Soil contamination	Possible	Minor	Low

Source: Purdon Planning

5.4.2 *Loss of threatened ecological community*

Likelihood: Remote	The only threatened community is a small patch of EPBC Act listed woodland in south east corner of the site, occupying an area of approximately 2ha (5% of total site). The woodland is contained within one proposed block and would require an EPBC referral before any action was taken to remove the woodland. The subdivision and internal access road has been designed to avoid any direct impact on this woodland.
Consequence: Major	The patch is listed as critically endangered pursuant to the EPBC Act. Clearance of 2.08 ha of this Threatened Ecological Community would constitute a significant impact on the listed community.
Risk: Low	
Mitigation	Mitigation could include provisions in the Land Management Agreement (LMA) and Crown Lease to protect the woodland. EPBC referral would be required before any impacting action could take place.

5.4.3 *Loss of threatened species habitat*

Likelihood: Likely	The cumulative scenario includes the removal of all native vegetation. No threatened animal species were found directly inhabiting the site, however several remnant trees may provide habitat for birds moving through the area. No threatened plants were found on site.
Consequences: Major	The remnant trees are scattered with little to no mid storey or native understorey, meaning the habitat is of limited potential value to threatened fauna species (for more detail, see Section 3.2.2). However, clearance of a few of the remnant eucalypt trees would be of consequence to the ecological values of the site and locality.
Risk: Very High	
Mitigation	Mitigation could include provisions in the Land Management Agreement (LMA) and Crown Lease to prohibit any tree removal without permission.

5.4.4 Loss of fauna

Likelihood: Likely	Very little native fauna was found inhabiting the site, and fauna on site was highly mobile (birds) and would be able to relocate. Removal of all native vegetation would likely result in some loss of less mobile species such as insects.
Consequences: Moderate	No threatened fauna was found on site. Species that are present are reasonably common and their loss would not have a significant ecosystem impact. The site is surrounded on two sides by very large areas of bushland of higher quality, removing this patch is unlikely to diminish the population viability of the whole (for more detail, see Section 3.2.2).
Risk: High	
Mitigation	Mitigation includes retention of existing trees as a condition in the Crown Lease and LMA.

5.4.5 Impacts on Migratory Fauna

Likelihood: Unlikely	No migratory fauna is known to reside on site.
Consequence: Minimal	No migratory fauna species are likely to utilise the site, thus impacts within the site would be of little or no consequence to migratory species.
Risk: Negligible	
Mitigation	Mitigation includes retention of existing trees as a condition in the Crown Lease and LMA.

5.4.6 Loss of Rare and Uncommon Flora

Likelihood: Unlikely	No rare or uncommon flora species were recorded in the site, and none are considered likely to occur in the site. The understorey is heavily modified in all but the small EPBC Act Box-Gum Woodland patch in the south east corner of the site. As such it is unlikely any rare or uncommon flora is present, however if it is, it would be impacted by a scenario where all vegetation is removed.
Consequence: Moderate	In the unlikely event that rare or uncommon flora species occur in the site then the removal of all vegetation would impact these species. However, given the highly modified condition of the ground storey throughout the site, removal of all vegetation could not impact habitat of significance to any rare or uncommon flora species. If such a species is present in the site then it has persisted despite long-term high intensity stocking and other disturbances, and thus is likely to be resilient to future disturbance (for more detail, see Section 3.2.2).
Risk: Low	
Mitigation	Mitigation includes retention of existing trees as a condition in the Crown Lease and LMA. EPBC Woodland area is protected by the requirement for impact track referral as a precursor to any clearing.

5.4.7 Loss of Native Vegetation

Likelihood: Almost Certain	The cumulative scenario includes the removal of all native vegetation on the site. However, there are significant legislative obstacles for a lease holder wishing to undertake these actions. Some of the ground storey in parts of the site comprises native vegetation that would be disturbed as part of possible future agricultural uses. This scenario also includes the removal of all eucalyptus to make way for future agricultural uses.
Consequence: Major	Site is not known to contain rare or uncommon vegetation species, in most parts of the site native vegetation is not common or diverse enough to constitute a native dominant ecological community at the ground story level. Existing native vegetation is the result of and has been resistant to disturbance in the past. Site is adjacent to larger patches of higher quality native vegetation and site loss is unlikely to detract from the whole (for more detail, see Section 3.2.2). However, clearance of the remnant eucalypt trees would be of consequence to the ecological values of the site and locality.
Risk: Significant	
Mitigation	Mitigation includes retention of existing trees as a condition in the Crown Lease and LMA. A DA assessment, and EPBC referral would be required before action could take place.

5.4.8 Weed Invasion

Likelihood: Likely	Some weeds are already present on site (e.g. Pinus radiata) Intensive land management has been a long-term practice and is likely to continue, providing resources and impetus for weed control. Future land holders will be bound by a LMA requiring attention to weed control and management. Removal of native vegetation across the site and disturbances such as earthworks or fertiliser application can remove competing vegetation, allowing weeds to colonise the site. Weeds also have the potential to be imported to the site on the treads of farming and earth moving equipment.
Consequence: Minor	Environment on the site is already highly disturbed and modified, and therefore any weed invasion is unlikely to do significant further damage. Possibility of site seeding weeds onto nature reserve (for more detail, see Section 3.2.2).
Risk: Medium	
Mitigation	Mitigation could include provisions in the LMA about weed control.

5.4.9 Loss of Aboriginal Heritage

The mapping of Aboriginal heritage sites shown by PastTraces (2018) shows three possible low order locations on site, none of which are impacted by proposed development

Likelihood: Almost certain	The site is not known to contain any Aboriginal heritage artefacts. The highly modified status of the site makes future discovery less likely. The site does contain a possible scar tree. A worst-case scenario which resulted in clearing of all vegetation could result in its removal, posing a heritage risk. (for more detail, see Section 3.2.3)
Consequence: Moderate	Destruction of artefact may cause concern to the community
Risk: Very High	
Mitigation	Mitigation could include retention of items of heritage as a condition in the Crown Lease and LMA.

5.4.10 Loss / Damage to Non-indigenous Heritage

Likelihood: Remote	Site is not known to contain any historical items. (for more detail, see Section 3.2.3)
Consequence: Minimal	Destruction of artefact could cause significant distress
Risk: Negligible	
Mitigation	No mitigation required

5.4.11 Traffic

Likelihood: Unlikely	Traffic impacts unlikely from addition of 4 dwellings and continuation of same land use
Consequence: Minor	Traffic impacts from site are dispersed around the site perimeter and enter an area with low congestion. Location of site close to urban area means distances are low so slow speeds have a low impact on travel time. (for more detail, see Section 3.2.4)
Risk: Very Low	
Mitigation	Mitigation will include upgrade of some driveways, and removal of others including a reduction in number along Mugga Lane.

5.4.12 Water Contamination

Likelihood: Possible	Additional dwellings with septic systems and future agricultural uses could impact water quality of site runoff. The site does not contain permanent creeks or waterways reducing the likelihood of water pollution escaping the site. Use of dangerous chemicals on the site (different to what is currently used to manage agriculture) is unlikely
Consequence: Minor	Site is small with only a few additional future dwellings possible. Catchment does not contain sensitive uses (e.g. drinking water extraction) immediately downstream. (for more detail, see Section 3.2.1)
Risk: Low	
Mitigation	Mitigation could include conditions in LMA to reduce stormwater flow and restrict use of harmful chemicals.

5.4.13 Erosion and Sedimentation

Likelihood: Almost Certain	Agriculture and 4 additional residential dwellings as explored in Section 5.0 are unlikely to result in large scale earthworks although some may be required. All major works will be required to consider erosion and sediment as part of a regular DA process. A scenario which results in the clearing of all vegetation from the site poses risks of gully erosion and dust movement in dry conditions. Agricultural uses that require green houses, terraces or other large-scale infrastructure may require large scale earthworks.
Consequence: Moderate	Parts of site are already eroded. Most runoff from the site enters an enclosed stormwater drain once it is off the site. While this prevents sedimentation impacting neighbouring blocks, large amounts of sediment could block this drain, impacting the lower parts of the site. (for more detail, see Section 3.2.1)
Risk: Very High	
Mitigation	Mitigation could include conditions in the Crown Lease and LMA to reduce stormwater flow off site and clearing. All major works will be required to consider erosion and sediment as part of a regular DA process.

5.4.14 Impact on Waterways

Likelihood: Almost Certain	Dwellings and continuation of agricultural use (as already permitted) unlikely to result in waterway impacts. A scenario which results in the clearing of all vegetation from the site poses risks of gullying and salinity issues. Intensive agriculture on the site could also result in additional use of chemicals.
Consequence: Minor	No major waterways cross the site. A small ephemeral creek that crosses the site drains into Jerrabomberra creek. Most runoff from the site enters an enclosed stormwater drain once it is off the site. (for more detail, see Section 3.2.1)
Risk: High	
Mitigation	Mitigation could include conditions in LMA to reduce stormwater flow and restrict use of harmful chemicals.

5.4.15 Bushfire

Likelihood: Unlikely	The site is mostly cleared, much of the understory is removed, there is good road access to the site, and the site has access to town water supply. However, the site is within a bushfire prone area. A scenario which results in the clearing of all vegetation (fuel) from the site will significantly reduce the bushfire risk.
Consequence: Moderate	A bushfire could cause loss of life and or significant property damage to the site and surrounds (for more detail, see Section 3.2.8).
Risk: Low	
Mitigation	Prepare and implement bushfire management plan as per the LMA and the Blackash report (2018) (separate report).

5.4.16 Air Quality

Likelihood: Almost Certain	Proposed dwellings will have very low impacts on air quality. Clearing of vegetation from the site could result in localised dust impacts during the clearing process. Elevated site could result in agricultural chemicals and dust to escaping the site, although prevailing winds would minimise any impact on main residential areas. Some agricultural activities (e.g. cropping, orchards) could employ chemical spraying for pest control and or fertilisation.
Consequence: Moderate	Any air quality impacts from a small site with agricultural use are likely to be limited and localised. However, dust or over spray could reach residential areas in the wrong wind conditions.
Risk: Very High	
Mitigation	Mitigation could include conditions in the Crown Lease and LMA to control vegetation clearing and restrict use of harmful chemicals. All major works will be required to consider erosion and sediment as part of a regular DA process.

5.4.17 Noise

Likelihood: Likely	Clearing of vegetation from the site could require the use of heavy machinery and may result in localised noise generation. Ongoing agricultural activities permitted under the proposed crown lease would be unlikely to generate excessive noise.
Consequence: Minimal	Neighbours and individuals living on site may be affected. Site is very large and is in a thinly populated area. Activities are likely to be temporary.
Risk: Low	
Mitigation	Any development would be required to comply with existing ACT Noise Standards.

5.4.18 Visual

The topography of the block means external views of the site are from Hindmarsh Drive, and other adjacent minor roads are screened by vegetation and small ridges. The proposed blocks 1 and 2 will be the most visible from Hindmarsh Drive but contain existing dwellings and will not have additional dwellings allowed in the lease, meaning there will be no significant visual changes resulting from this lease variation or future DAs.

Blocks where new dwellings will be permitted under the proposed subdivision are located on the southern side of the site furthest from Hindmarsh Drive and screened from Mugga Homestead by a small ridge.

Conversion of the site to cropping (e.g. olive groves) will introduce a new visual character to the site as seen from a short section of Hindmarsh Drive. But this type of agricultural enterprise is consistent with nearby land uses and the character of Symonston.

Likelihood: Almost Certain	A scenario which removes all native vegetation from the site would result in significant visual changes to the site. This changes might constitute an impact to the rural character of the area if a significant number of structures, such as greenhouses or agricultural sheds, were developed.
Consequence: Minimal	Site is visible from a short section of Hindmarsh Drive, and from local roads such as Mugga Lane and Narrabundah Lane. All three roads contain verge plantings which will continue to screen the site visually. Possible agricultural use is unlikely to be out of character with the precinct, which also contains an olive grove and other unsightly uses (not permitted on this site) such as a bus depot and a mobile home park. The site is not in the vicinity of a Main Avenue or other feature of national significance. It is near a variety of other unsightly uses, including Mobile Home Parks and Offices with large areas of car parking.
Risk: Medium	
Mitigation	No mitigation required because of existing verge trees, and, existing tree cover and other development.

5.4.19 Soil Contamination

Likelihood: Possible	Existing agricultural use has not resulted in contamination. Further agricultural use and dwelling houses do not pose a high contamination risk.
Consequence: Minor	Site is not densely inhabited. Site is separated from densely populated areas.
Risk: Low	
Mitigation	Mitigation could include restrictions in the LMA on use of dangerous chemicals.

6.0 Summary of Proposed Risk Mitigation Measures

This section identifies a range of mitigation measures and implementation methods that would address risks listed in Sections 5.3 and 5.4.

As previously discussed, the proposed development (subdivision without change of lease purpose) does not cause any direct environmental impacts, however, for completeness the cumulative scenario has been assessed in this report. It is also considered that existing statutory provisions, such as the Crown Lease, the LMA, etc, provide strong, enforceable and legally binding regulatory controls that protect against cumulative impacts of future development on the site.

Should future development activities requiring an DA assessment be attempted on the sites, it is considered that they will be subject to appropriate scrutiny in order to prevent inappropriate or cumulative impacts of development.

6.1 Avoidance of the EPBC Act / NC Act Box-Gum Woodland

As shown in Figure 5, the new block boundaries have been located to avoid interference with the small area of EPBC Act/NC Act Box-Gum Woodland in the south east corner of Block 5. The area will not be divided in order to keep management across the patch consistent. The proposed right-of-way has similarly been located so as to avoid this area. The two existing driveway access points off Narrabundah Lane which currently bisect the Box-Gum Woodland will also be removed to reduce potential impact on this patch of woodland.

For clarification, this s211 only relates the clearing of native vegetation and does not consider impacts on EPBC Box Gum Woodland as the subdivision has been designed to ensure there is no such impact to this EPBC asset. Therefore, as noted previously in this report any future proposal likely to impact on the EPBC Box Gum Woodland will require referral and assessment under the EPBC Act.

6.2 Retention of Remnant Trees and Native Vegetation

The new block boundaries will be fenced with standard rural stock fences. These boundaries have been located in a manner that will not require removal of, or other impacts to, any of the study area's remnant eucalypt trees or native grasses. Similarly, the two rights-of-ways to be established will not impact any remnant vegetation.

It is noted that the remnant trees shown in Figure 7 and Figure 10 were recorded via hand-held GPS which is accurate to +/- 3 m. Accordingly, a detailed survey plan will be required to accurately record the location of the remnant trees. This survey plan will be completed prior to finalisation of the boundary alignments, thereby allowing fine scale adjustment of boundaries to avoid impacts to remnant trees.

The subdivision layout has been designed to ensure there is ample space on each block to site a house, out buildings, driveways and its associated curtilage without impacting any ecological values. It will also not be necessary to clear any canopy trees in order to carry out a commercial agricultural use as stipulated in the lease (Refer Section 3.2.6).

Each Crown Lease will contain a provision (continuing from the existing crown lease) which prohibits any removal of trees or tree like plants on the land without prior written approval from ACT Government. This will ensure effective management of tree loss on site.

The LMA for each Crown Lease (to be prepared and endorsed by the lessee and TCCS) can also contain provisions to prevent loss of regulated trees and or native grasses without agency approval in accordance with legislation. This would be an added protection for native vegetation management post subdivision approval of the land.

Development applications or lease variations that seek to, or make it possible, to remove remnant trees from more than 0.5 ha of area within the future subdivided sites will trigger a further EPBC referral (if impacting the EPBC Act Box-Gum Woodland) and Impact Track assessment, resulting in the same considerations taken in this report being considered in context of the specific proposal. Future Impact Track Assessments will be required to consider the individual site in the context of its surrounds, preventing the risk of cumulative impacts across the eight subdivided sites proceeding unconsidered.

6.3 Protection of Aboriginal Cultural Heritage

None of the 3 Aboriginal heritage sites identified on Block 5 meet any of the criteria for listing to the ACT Heritage Register.

These heritage sites are not impacted by the proposed development.

However, the recommendations of the Cultural Heritage Assessment, including protocols for accidental discovery as outlined in the Past Traces report for the site (November 2018) will be implemented where relevant. These provisions can be included in the LMA for each of the new blocks in the approved subdivision.

6.4 Traffic management & Site access

The DA will require assessment by TCCS of new access/egress arrangements for the subdivision.

The current DA plans reduce the number of existing crossovers to Mugga Lane in line with existing and projected traffic volumes. Proposed internal private access roads have been shown on the DA plans and do not impact on native vegetation.

6.5 WSUD

Sellick Consultants have assessed that the proposed subdivision or development resulting from the proposed subdivision will not have a significant impact on the quantity or quality of water use on site and runoff.

6.6 Erosion and Sediment Control Plan

Although the risk of erosion and sedimentation is minimal, where required, erosion and sediment controls can be established in accordance with the Environment Protection Guidelines for Construction and Land Development in the ACT (ACT Government 2011) and incorporated into the LMAs for each of the blocks in the approved subdivision. Refer Sellick report 2018.

6.7 Bushfire risk management

Adoption of the Bushfire Risk Management Plan provided by Blackash for the site will minimise future fire risk for the site. This plan can be incorporated into LMAs for each Crown Lease in the approved subdivision.

6.8 Crown lease provisions

The new Crown Leases will include a clause, continuing from the existing lease, as follows:

"TREES *(d) That the Lessee shall not cut down, fell, ringbark or otherwise injure or destroy (or suffer to permit the same) any live tree or tree-like plant on the land without the previous consent in writing of the Territory; "*

An alternative approach that has been used in other rural leases (e.g. Block 2224 Jerrabomberra) included a clause to achieve ***"…environmental and heritage conservation outcomes in accordance with approved land management Agreement".*** A clause of this nature could be considered if the existing clause is not considered sufficient to preserve conservation values.

6.9 Land management agreement (LMA)

An LMA will be required for each of the Crown Leases and provides a legally enforceable mechanism for land management.

An LMA gives the Territory the opportunity to enforce the protection of items of environmental and cultural significance in accordance with ACT legislation.

Key elements addressed in the LMA and **managed by TCCS** include weed management; feral pests; bushfire management; tree clearing; carrying capacity; water pollution; erosion protection; protection of native species and other measures.

An LMA requires regular review and is renewed if and when the property changes ownership.

6.10 Mitigation Summary

The following actions are proposed to mitigate the risks of environment and social damage from the proposed development.

Table 11: Summary of mitigation measures

Mitigation Measure	Action	Implementation
6.1	The patch of EPBC/NC Act Box-Gum Woodland in its entirety is located in one block to avoid the risk of cumulative impacts.	Lease Variation, Subdivision DA
6.2 i)	Refer measure 6.8	Clause in Crown Lease
ii)	The Land Management Agreements (LMAs) for the sites to include protections for trees and native grasses	LMA
6.3 i)	Heritage protection recommendations from the report by Past Traces will be adopted during initial construction and in subsequent LMAs	LMA
ii)	LMAs for the sites to include clauses protecting heritage values	LMA
6.4	Traffic input onto Mugga Lane reduced by reduction and relocation of driveways.	Subdivision DA
6.5	WSUD impacts are not sufficient to warrant action at this stage	LMA
6.6	LMAs for the sites to include clauses covering erosion and sediment control measures	LMA
6.7	Recommendations of the Bushfire management report to be implemented into the LMAs	LMA
6.8	The proposed leases include a clause to require lessees to seek development approval for the removal of trees or tree-like plants	Clause in Crown Lease
6.9	The LMA will also address the following items; weed management; feral pests; bushfire management; tree clearing; carrying capacity; water pollution; erosion protection; and other measures.	LMA

6.11 Residual Risk Summary After Mitigation Implementation

Table 13: Summary of Risks upon Mitigation Implementation

No.	Potential Impact	Risk Assessment		
		Likelihood	Consequence	Risk prior to mitigation
1	Loss of threatened ecological community	Remote	Major	Low
2	Loss of habitat of threatened species	Remote	Major	Low
3	Loss of fauna	Remote	Moderate	Very Low
4	Impacts on Migratory Fauna	Unlikely	Minimal	Negligible
5	Loss of Rare and Uncommon Flora	Remote	Moderate	Very Low
6	Loss of 'Native Vegetation'	Remote	Major	Low
7	Weed invasion	Likely	Minor	Medium
8	Loss of Aboriginal Cultural Heritage Items	Remote	Moderate	Very Low
9	Loss/Damage to Historical Item	Remote	Minimal	Negligible
10	Traffic / Access Impacts	Unlikely	Minor	Very Low
11	Water contamination	Unlikely	Minor	Very Low
12	Erosion and Sedimentation	Unlikely	Moderate	Low
13	Impact on Waterways	Unlikely	Minor	Very Low
14	Bushfire	Unlikely	Moderate	Low
15	Air quality	Unlikely	Moderate	Low
16	Noise	Possible	Minimal	Very Low
17	Visual Impact	Almost Certain	Minimal	Medium
18	Soil contamination	Unlikely	Minor	Very Low

7.0 Residual Risk Assessment

7.1 Proposed Development Risks

Prior to mitigation the risk level of all elements directly included in the Subdivision DA was considered negligible, this continues to be the case after mitigation measures are implemented.

7.2 Cumulative Impacts Risk Assessment

The detailed risk assessment in section 5.4 assesses the cumulative impacts where native vegetation is removed. This assessment concluded that this development could result in substantially higher risk impacts than those associated with the direct impacts. The following elements are considered to occupy a medium or higher risk category:

- Loss of threatened ecological community – significant risk
- Loss of habitat of threatened species – very high risk
- Loss off fauna – high risk
- Loss of native vegetation – significant risk
- Weed invasion – medium risk
- Loss of aboriginal cultural heritage items – very high risk
- Erosion and sedimentation – very high risk
- Impact on waterways – high risk
- Air quality – very high risk
- Visual impacts – medium risk

The risks identified in this scenario are primarily mitigated by measures that reduce the likelihood of the scenario as a whole taking place. These include:

- ACT Government development approval is required to permit the removal of native vegetation in accordance with the lease. For clarification, this s211 only relates the clearing of native vegetation and does not consider impacts on EPBC Box Gum Woodland. As noted previously in this report any future proposal likely to impact on the EPBC Box Gum Woodland will require assessment and referral under the EPBC Act.
- Land Management Agreements across the eight sites will protect native vegetation.
- Environmental Significance Opinions or further EIS processes that determine separately that there are not significant impacts from clearing will be required on each of the sites before significant native vegetation removal can take place.
- Future DA processes will consider cumulative impacts across the eight sites even after subdivision.

These existing preventative measures combined with the proposed mitigation measures identified in 6.0 of this report would substantially reduce potential future cumulative impacts associated with future development of the site.

On the basis that the mitigation measures are adopted by EPSDD as “conditions of development” the residual risk of the proposed subdivision and future activity on site is assessed as overall, being **very low**.

8.0 Conclusion

This submission has been prepared to support a request for an exemption to prepare an EIS under Section 211 of the ACT *Planning and Development Act 2007* for a development application on the subject site for a proposed 8 block agricultural subdivision with one ancillary dwelling on each block.

The subject site is located at the corner of Narrabundah Lane and Mugga Lane in Symonston and has an area of approximately 36ha. The site is currently used as an agricultural property with four (4) approved and occupied residential dwellings.

The s211 exemption application is based on existing specifically commissioned studies of the site which address all possible future impacts of the proposal. This includes an analysis of the cumulative impact of the proposed development. The report adopts the EPSDD methodology used to establish a risk assessment and identifies a range of mitigation measures that if implemented would significantly reduce any perceived risk of the impacts identified occurring as a result of the possible cumulative impact of the development.

The risk assessment has been addressed at two levels: a proposed development scenario (probable impact); and a cumulative impact (possible cumulative impact) that envisages total clearance of native vegetation (trees and grasses) for use of the land under the land uses permitted in the proposed Crown Leases. It should be noted that the cumulative impact involving a material change of land use, crown lease conditions or substantial land clearance would require separate development approval in order to occur.

The submission seeks exemption from an EIS under s211 of the ACT *Planning and Development Act 2007*, on the basis that the information and assessment presented in this submission is sufficient to determine potential impacts and that a full EIS would not provide additional information for assessment.

It is concluded that the nature of the development and the proposed mitigation measures combine to minimise or offset a number of environmental impacts identified as part of the risk assessment in the study.

It is understood that proposed mitigation measures will form the basis of conditions of development consent.

It is therefore **recommended** that EPSDD and the Minister for Planning endorse the s211 exemption sought by this submission to enable the assessment of the DA.

Purdon Planning
October 2019

Attachments (separate reports)

Attachment A: Ecological Assessment Report (Capital Ecology, 2018)

Attachment B: Addendum to EIA (Capital Ecology, 2019)

Attachment C: Aboriginal and Historical Cultural Heritage Assessment (Past Traces, 2018)

Attachment D: Traffic Assessment (Sellick, 2018)

Attachment E: Water Quality (Sellick, 2018)

Attachment F: Bushfire Risk Assessment (Blackash, 2018)

20 September 2018

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Ecological Impact Assessment for the proposed subdivision of Block 5, Section 103, Symonston

Capital Ecology project no. 2827

Dear Mr Purdon,

This letter provides an Ecological Impact Assessment (EIA) for the proposed subdivision (the 'proposed development') of Block 5, Section 103, Symonston, ACT (the 'study area'). The proposed subdivision will create eight (8) blocks from the study area, and each will retain the existing lease purpose clause being agriculture with ancillary dwelling. The impacts of the proposed development will be limited to the ground disturbance and groundstorey vegetation clearance required for the construction of new and upgraded driveway cross-overs to access the subdivision, minor road works and rural fencing. The proposed subdivision will avoid impacts to the patch of Box-Gum Woodland identified on ACTMAPi and will retain all mature remnant eucalypt trees.

The proposed development does not include construction of residential dwellings or other structures, however it is noted that such development will be consistent with the lease purpose clause for each of the created blocks.

Figure 1 shows the location of the study area, Figure 2 shows the study area and proposed subdivision boundaries on 2018 aerial imagery.

The primary aim of this EIA is to determine and assess the likely impacts of the proposed development upon habitat for terrestrial flora and fauna species and ecological communities listed pursuant to the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and/or the ACT *Nature Conservation Act 2014* (NC Act).

This EIA has been prepared with regard to:

- information in the Planning Report and Statement Against Criteria[1] and associated spatial data regarding the study area and the proposed development layout;
- the results of database searches for the study area;
- a review of relevant studies and other background information;
- field surveys on 23 August 2018 and 10 September 2018, completed to record and assess the ecological values of the study area; and
- the knowledge of the authors regarding the biota of the locality, specifically the threatened ecological communities, flora, and fauna (and associated habitat) with the potential to occur in the lowland woodland ecosystems of the region.

1. Methods

1.1 Database and Literature Review

To inform the surveys, Capital Ecology completed a desktop review, involving the following.

- A list of threatened species (flora and fauna), threatened populations and threatened ecological communities (TECs) listed pursuant to the EPBC Act with the potential to occur in the study area was obtained using the Department of the Environment and Energy's online EPBC Act Protected Matters Search Tool (PMST) on 22 August 2018.
- A review of the ACT Government ACTMAPi mapping tool and Canberra Nature Map to obtain the most current layers and point data for the significant ecological values of the locality. These values include species listed as threatened pursuant to the EPBC Act and/or the NC Act, together with flora species considered 'rare or uncommon in the ACT' and fauna which are otherwise of a conservation focus.
- Previous and current studies undertaken by Capital Ecology and others in the locality.

1.2 Remnant Tree Mapping

Each of the remnant (i.e. naturally occurring and over 20 cm Diameter at Breast Height [DBH]) woodland eucalypts in the study area was identified to species and marked via handheld GPS.

1.3 Vegetation Survey and Mapping

The vegetation across the entire study area was surveyed and mapped in accordance with the detailed methodology provided in Chapter 3 of the ACT *Environmental Offsets Calculator Assessment Methodology* (ACT Government 2015[2]) (the 'Survey Methodology'). The vegetation survey and mapping involved the three-staged process outlined in the sections below.

The results of the vegetation survey have been accurately mapped using GIS allowing the total area of each vegetation zone to be calculated.

[1] Purdon Planning Pty Ltd (2018). *Planning Report and Statement Against Criteria – Lease Variation and Subdivision & Minor Works – Block 5 Section 103, Symonston*. 3 July 2018.
[2] ACT Government (2015). ACT *Environmental Offsets Calculator Assessment Methodology*.

1.3.1 Plant Community Type (PCT) mapping

The on-ground boundaries of each of the Plant Community Types (PCTs) (as provided in the Survey Methodology and the ACT Vegetation Types Database) present in the study area were accurately mapped. Mapping of the PCTs (i.e. the climax communities) was undertaken by walking and/or driving the boundaries and marking them using a combination of hand-held GPS and marking directly on to high resolution orthorectified aerial photograph field maps.

Given that ecotones are usually gradual transitions between vegetation communities (i.e. often in excess of 50 m in width) and that the vegetation across much of the study area has been subject to intensive modification over an extended period, it is difficult to now define the precise pre-1750 boundaries of the PCTs. Notwithstanding this, the PCT boundaries were defined based on:

- the presence, species, growth form and density of remnant canopy trees and/or stags or stumps;
- the presence and species of midstorey shrubs and trees;
- the floristic composition of the groundstorey; and
- the landscape position and other geographical features (elevation, aspect, soils, apparent hydrology etc.).

The above was informed by the both the current vegetation (2018 aerial image and site surveys) and that shown in the 1955 aerial image provided on ACTMAPi.

1.3.2 Vegetation Zone definition and mapping

Each of the mapped PCTs was divided into Vegetation Zones based on the structure, floristic composition and overall condition ('intactness') of the vegetation. Mapping of the Vegetation Zones was undertaken by walking and/or driving the boundaries and marking them using a combination of hand-held GPS and marking directly on to high resolution orthorectified aerial photograph field maps.

1.3.3 Plots and transects – Site Value Assessment

A series of Site Value vegetation assessment survey plot/transect combinations were completed, with the aim to adequately sample each Vegetation Zone. The Site Value is the quantitative measure of the condition of the vegetation for each Vegetation Zone. For each plot/transect the ten site attributes listed in Table 3 of the Survey Methodology were collected. The number of survey plot/transects completed within each Vegetation Zone was determined in accordance with Table 2 of the Survey Methodology and totalled ten (10) across the five (5) Vegetation Zones. The locations of the plots/transects are shown in Figure 4. All plot/transects were placed randomly within the relevant Vegetation Zone with the aim of achieving a representative sample.

As illustrated in Diagram 1, Each plot/transect combination involved a 20x20 m (400 m^2) plot within which all species were recorded. A 50 m transect traverses the plots and runs 30 m further; along this all of the other attributes were collected.

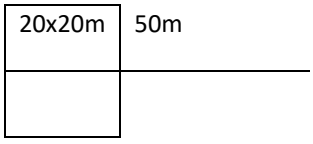

Diagram 1. Vegetation survey plot/transect combination

1.4 Rock-turning Survey

The study area contains two small patches of outcropping rock. Based on their location in highly modified pasture, together with the relatively low density of loose surface rocks, these patches were determined to have a low likelihood of supporting either of the threatened reptile species with the potential to occur in the locality (i.e. Pink-tailed Worm-lizard *Aprasia parapulchella* and Striped Legless Lizard *Delma impar*). Notwithstanding this, a rock-turning survey was completed covering each of the patches of rocky habitat present in the study area. The survey comprised a total of approximately two (2) hours of active survey effort completed on 10 September during suitable survey conditions (sunny with maximum temperature of 19.7°C, BOM Canberra Airport).

Jones (1999[3]) found that 750 suitable habitat rocks need to be turned within a given patch to achieve an indication of Pink-tailed Worm-lizard presence/absence to the 95% confidence interval. However, given their small size and the general low density of loose surface rocks, neither patch contains 750 suitable habitat rocks and therefore the survey involved the turning of most or all non-embedded potential habitat rocks in these patches.

1.5 Likelihood of Occurrence Assessment

The Likelihood of Occurrence Assessment for threatened flora and fauna species is a categorisation used to determine the likelihood that the subject species occurs within a study area. The results are based on the findings of completed desktop studies and field surveys, expert opinion, and consideration of the species' currently recognised distribution and preferred habitat.

Threatened species and populations identified in the Likelihood of Occurrence Assessment include all of those identified during the database and literature review as potentially occurring within five kilometres of the study area. Included are threatened species listed pursuant to the EPBC Act and/or the BC Act and considered by Capital Ecology to have some potential to occur within the study area.

The likelihood of a species occurring within the study area is categorised as either negligible, low, moderate, or high. A species that has been identified within the study area during the surveys for this EIA or by other confirmed records is expressed as confirmed.

The completed Likelihood of Occurrence Assessment is provided as Appendix A. Species assigned a moderate or higher likelihood of occurrence within the study area, other than if this is limited to transient visitation, are considered in more detail in Section 2.3 (threatened flora) and Section 2.4 (threatened fauna) of this EIA.

[3] Jones S.R. (1999). *Conservation biology of the pink-tailed worm lizard (Aprasia parapulchella)*. PhD thesis, Applied Ecology Research Group, University of Canberra.

2. Results

2.1 Vegetation

2.1.1 Descriptive Overview

The entire study area has undergone past vegetation clearance and/or modification associated with its long-term use as small lot rural-residential land on the periphery of urban Canberra. As illustrated in Figure 3 (1955 aerial image with overlay of current remnant trees), the majority of the study area's remnant eucalypt trees have been retained and most of the development, tree planting, etc. which has occurred post 1955 has avoided remnant tree clearance. The distribution of stumps in the paddocks east of the existing remnant trees, together with the eastern extent of the remnant eucalypts in Callum Brae to the south, indicates that eucalypt trees likely also historically occurred across much of the eastern paddocks of the study area. These trees were likely cleared prior to 1955 to permit cropping and/or increase grazing productivity through pasture improvement (i.e. spreading/sowing pasture grass and forb species with or without superphosphate application).

The history of high-intensity stock grazing has removed the natural midstorey and shrubstorey throughout much of the study area, the only exceptions being the band of remnant Box-Gum Woodland in the southeast of the study area and a small patch further west adjacent to Narrabundah Lane (shown as PCT-ACT01 Zone 1 in Figure 4). The previous property landowners maintained lower stocking rates in these areas to permit eucalypt regeneration.

The band of remnant Box-Gum Woodland in the southeast of the study area is the only portion of the study area which has not been subject to long-term pasture improvement and/or other intensive groundstorey modification. The effects of this history of pasture improvement are evident in the clear exotic dominance of the groundstorey across most of the study area, including both the cleared paddocks and those with retained trees. The previous landowners report that the cleared paddocks have also been historically cultivated and sown with oats (*Avena* sp.). As shown in the 1955 aerial image (refer Figure 3), the broad corrugations in the southeast paddock are an artefact of the orchid once present. Shown as PCT-ACT16 Zone 3 in Figure 4, the only cleared portions of the study area that retain a marginal dominance of disturbance-tolerate native grasses and forbs are those associated with the rock outcrops with thin soils where cropping has been precluded and pasture improvement has been less effective.

As shown in Figure 4, several clumps of trees have been planted for landscape and/or regeneration purposes, these include:

- clumps of the exotic trees Radiata Pine *Pinus radiata* and Lombardy Poplar *Populus nigra* planted adjacent to Mugga Land and Narrabundah Lane;
- clumps of native trees including Candlebark *Eucalyptus rubida*, Brittle Gum *E. mannifera*, Yellow Box, and Blackwood *Acacia melanoxylon*, planted as a Landcare project in 1992.

Many other exotic and non-local native plant species have been planted in the study area, notably associated with the four dwellings and ancillary buildings. Several of the noxious weeds occurring in scattered locations around the study area are likely the progeny of those planted in gardens and as hedges (e.g. Blue Periwinkle *Vinca major*, Orange Firethorn *Pyracantha angustifolia*).

2.1.2 Plant Community Types and Vegetation Zones

As illustrated in Figure 4, the study area contains the following two PCTs.

1. **PCT-ACT01** – Tablelands Dry Tussock Grassland.

   PCT-ACT01 generally occurs on valley floors where tree growth is inhibited by cold air drainage. Occurring on moisture retaining fertile clay soils derived from basalt, limestone or other fine-grained sedimentary rocks. PCT-ACT01 is characterised by a dominance or co-dominance of the native grasses Wallaby Grasses *Rytidosperma* spp., Red-leg Grass *Bothriochloa macra*, Tall Speargrass *Austrostipa bigeniculata* and Kangaroo Grass *Themeda triandra* together with a moderate to high diversity of native forbs.

   PCT-ACT01 usually intergrades with PCT-ACT16 (Box-Gum Grassy Woodland) as elevation increases. As illustrated in Figure 4, the study area provides an example of this with the lowest elevated (generally below the 610 m contour) eastern portion of the study area supporting PCT-ACT01, intergrading with PCT-ACT16 as elevation increases to the west.

   The PCT-ACT01 in the study area has been modified such that it no longer represents the natural grassland that once occurred, instead the areas mapped as PCT-ACT01 Zone 1 are best described as exotic pasture.

2. **PCT-ACT16** – *Eucalyptus melliodora - E. blakelyi* Tableland Grassy Woodland.

   PCT-ACT16 occurs on toe-slopes and other areas of similar elevation on soils of moderate to high fertility and generally moderate depth. In its climax form this community would have been characterised by an open canopy, sparse or absent mid and shrubstorey, together with a defined grassy groundstorey supporting a high diversity of native forbs.

   As illustrated in Figure 4, the majority of the study area would have supported PCT-ACT16. This PCT now occurs in the following four discernible Vegetation Zones:

   - Zone 1 – Zone 1 comprises the band of remnant Box-Gum Woodland in the southeast of the study area and a small patch further west adjacent to Narrabundah Lane. These patches contain remnant Yellow Box and Blakely's Red Gum trees with canopy regeneration over a low to moderate diversity groundstorey dominated by Tall Speargrass *Austrostipa bigeniculata* and other common disturbance-tolerant native grasses.

   - Zone 2 – Zone 2 comprises the majority of the PCT-ACT16 in the study area. Zone 2 is characterised by remnant mature Yellow Box and Blakely's Red Gum trees over an absent midstorey and shrubstorey and a heavily pasture improved groundstorey clearly dominated by Phalaris *Phalaris aquatica*, Cocksfoot *Dactylis glomerata* and Clovers *Trifolium* spp.

   - Zone 3 – Zone 3 comprises the cleared portions PCT-ACT16 that retain a marginal dominance of disturbance-tolerate native grasses and forbs associated with the rock outcrops with thin soils where cropping has been precluded and pasture improvement has been less effective.

   - Zone 4 – Zone 4 comprises the cleared portions of PCT-ACT16 that have been cropped and/or heavily pasture improved. All areas of Zone 4 are clearly dominated by exotic species.

Table 1 provides a summary of the Vegetation Zones mapped in the study area and Plates 1 to 5 provide representative photographs of the Vegetation Zones.

Table 1. Vegetation Zones

PCT	Zone Number	Vegetation Zone ID	Photograph Plate	Canopy	Groundstorey Dominance	Diversity Low or Mod-high	Total Area (Ha)
ACT01	1	ACT-01-1	1	N/A - Grassland	Exotic	Low	2.10
ACT16	1	ACT-16-1	2	Present	Native	Low-Mod	2.08
	2	ACT-16-2	3	Present	Exotic	Low	16.21
	3	ACT-16-3	4	Absent	Native	Low	3.18
	4	ACT-16-4	5	Absent	Exotic	Low	12.22

2.1.3 Plots and Transects

The results of the 10 floristic plot/transect combinations are provided in Appendix 1. The results provide clear confirmation of the distinction between the identified Vegetation Zones of ACT-PCT16.

Plate 1. PCT-ACT01 – Zone 1

Plate 2. PCT-ACT16 – Zone 1

Plate 3. PCT-ACT16 – Zone 2

Plate 4. PCT-ACT16 – Zone 3

Plate 5. PCT-ACT16 – Zone 4

2.2 Threatened Ecological Communities

2.2.1 Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)

Two EPBC Act listed threatened ecological communities (TECs) have the potential to occur in the area, both listed as critically endangered under the EPBC Act: 'Natural Temperate Grassland of the South Eastern Highlands' (NTG-SEH), and 'White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland' (Box-Gum Woodland).

Natural Temperate Grassland of the South Eastern Highlands – listed as critically endangered pursuant to the EPBC Act

Description – The NTG-SEH TEC is characterised by grassy vegetation dominated by moderately tall (25–50cm) to tall (50–100cm), dense to open tussock grasses in the genera *Austrodanthonia* (note: now *Rytidosperma*), *Austrostipa*, *Bothriochloa*, *Poa* and *Themeda*. Up to 70% of all plant species may be forbs. The community may be treeless or contain up to 10% cover of trees, shrubs or sedges.

The *Approved conservation advice for the Natural Temperate Grassland of the South Eastern Highlands (NTG–SEH) ecological community* (Commonwealth of Australia 2016[4]) provides the key diagnostic characteristics and condition thresholds for determining whether a patch is the listed community. A patch is the listed community, assessed via a standard sampling plot of 400 m^2 (i.e. 20x20 m), if it meets either of the following scenarios.

> *Scenario A – The patch is characterised by at least 50 % foliage cover of the ground of either Themeda triandra, Poa labillardierei, or Carex bichenoviana.*
>
> *Scenario B – When the cover of the grassland is not evidently dominated by the species highlighted under Scenario A:*
>
> 1. *The percentage cover of native vascular plants (including annual and perennial species) in the patch is greater than the percentage cover of perennial exotic species.*
>
> *And*
>
> 2. *When assessed during favourable sampling times (i.e. spring-summer), the patch has:*
>
> - *At least 8 non-grass native species*
>
> *OR*
>
> - *At least 2 indicator species*
>
> *OR*
>
> - *A floristic value score (FVS) of at least 5.*

Presence in the study area – Absent – Whilst the patch mapped as PCT-ACT01 would once have been NTG-SEH, it is now clearly dominated by exotic pasture species and weeds. As such, it does not meet either scenario. Accordingly, the study area does not support NTG-SEH TEC.

[4] Commonwealth of Australia (2006). *Approved conservation advice for the Natural Temperate Grassland of the South Eastern Highlands (NTG–SEH) ecological community.*

White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland – listed as critically endangered pursuant to the EPBC Act

Description – The White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland TEC is characterised by a species-rich understorey of native tussock grasses, herbs and scattered shrubs (where shrub cover comprises less than 30% cover), and a dominance or prior dominance of White Box and/or Yellow Box and/or Blakely's Red Gum trees. This TEC occurs along the western slopes and tablelands of the Great Dividing Range from southern Queensland through New South Wales and the Australian Capital Territory to Victoria.

Presence in the study area – Confirmed – The entire portion of the study area mapped as PCT-ACT16 would have once supported the climax community of this TEC.

↓

Assessments of structure and floristic composition were undertaken in each of the four condition categories (Vegetation Zones) of PCT-ACT16 present in the study area. The purpose of these assessments was to determine whether the patches of each Vegetation Zone support characteristics sufficient to meet the listing criteria for the EPBC Act listed TEC. The assessment process follows that provided in the Commonwealth *EPBC Act Policy Statement 3.5 – White Box – Yellow Box – Blakely's Red Gum grassy woodlands and derived native grasslands* (Commonwealth of Australia 2006[5]). The results of this assessment are provided in Table 2. As detailed in Table 2, the area mapped as PCT-ACT16 – Zone1 meets the criteria for the EPBC Act listed TEC. PCT-ACT16 – Zones 2, 3 and 4 do not meet the listing criteria.

[5] Commonwealth of Australia (2006). *Policy Statement 3.5: White Box – Yellow Box – Blakely's Red Gum grassy woodlands and derived native grasslands. Environment Protection and Biodiversity Conservation Act 1999*. Commonwealth Department of Environment and Heritage.

Table 2. Assessment against the listing criteria for the EPBC listed TEC – White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland.

Criterion		Assessment Results			
		PCT-ACT16 Zone 1	**PCT-ACT16 Zone 2**	**PCT- ACT16 Zone 3**	**PCT- ACT16 Zone 4**
1.	*Is, or was previously, at least one of the most common overstorey species White Box, Yellow Box or Blakely's Red Gum?*	Yes Yellow Box and Blakely's Red Gum are co-dominant throughout this zone.	Yes Yellow Box and Blakely's Red Gum are co-dominant throughout this zone.	Yes A few scattered Yellow Box and Blakely's Red Gum trees remain in the zone and in the same landscape position across the adjoining blocks. These species are expected to have been dominant or co-dominant throughout this zone historically.	Yes A few scattered Yellow Box and Blakely's Red Gum trees remain in the zone and in the same landscape position across the adjoining blocks. These species are expected to have been dominant or co-dominant throughout this zone historically.
2.	*Does the patch have a predominantly native understorey?*	Yes The understorey was recorded as ranging from 67% to 88% native species cover.	No The understorey was recorded as ranging from 9% to 12% native species cover.	Yes The understorey was recorded as ranging from 63% to 72% native species cover.	No The understorey was recorded as ranging from 0% to 3% native species cover.
3.	*Is the patch 0.1 ha (1000 m^2) or greater in size with 12 or more native understorey species present (excluding grasses)? There must be at least one important species.*	No Only 4 native non-grass understorey species were recorded in total across both plots. Whilst it is acknowledged that the survey was completed in early spring, neither patch of Zone 1 is likely to contain 12 or more native non-grass understorey species if the survey was completed in late October.	N/A Refer Criterion 2 results.	No Zone 2 comprises two disconnected patches, each of which is larger than 0.1 ha. However, an average of only 1.5 native non-grasses was recorded across the plot/transects. Neither patch of Zone 3 is likely to contain 12 or more native non-grass understorey species if the survey was completed in late October.	N/A Refer Criterion 2 results.
	Or				

Criterion		Assessment Results			
		PCT-ACT16 Zone 1	**PCT-ACT16 Zone 2**	**PCT- ACT16 Zone 3**	**PCT- ACT16 Zone 4**
	Is the patch 2 ha or greater in size with an average of 20 or more mature trees per hectare, or is there natural regeneration of the dominant overstorey eucalypts?	Yes The patch of Zone 1 in the southeast corner of the study area is larger than 2 ha. This patch supports regeneration of overstorey eucalypts and an average of 20 or more mature trees per hectare. In addition, whilst encompassing only 667 m^2, the smaller patch is a contiguous with the Zone 1 occurring in the adjoining road reserve and has continuous canopy cover with that in the adjacent Block 1, Section 3. Accordingly, the smaller patch should also be considered the listed TEC in accordance with the listing criteria.	N/A Refer Criterion 2 results.	No Neither patch of Zone 3 contains mature trees or natural regeneration.	N/A Refer Criterion 2 results.
	Does the patch meet the criteria for the listed TEC?	**Yes**	**No**	**No**	**No**

2.2.2 Nature Conservation Act 2014 (ACT)

The following two ecological communities are listed as endangered pursuant to the ACT NC Act.

Natural Temperate Grassland

As noted above, the entire portion of the study area mapped as PCT-ACT01 would have once supported this TEC.

The definition of the NC Act listed TEC is generally consistent with the EPBC Act definition. Importantly, a patch must be predominantly native to be considered the TEC under the NC Act. Accordingly, as detailed above, given that patch of PCT-ACT01 is clearly exotic dominant, no part of the study area supports the NC Act listed TEC.

Yellow Box – Blakely's Red Gum Grassy Woodland

As noted above, the entire portion of the study area mapped as PCT-ACT16 would have once supported this TEC.

Woodland meeting the NC Act listed community was defined in Action Plan 10 (ACT Government 1999[6]) and Action Plan 27 (ACT Government 2004[7]) as any polygon in which:

- *the proportion of crown cover contributed by either E. melliodora or E. blakelyi or both jointly is ≥ 40%; and*
- *understorey is not exotic pasture; and*
- *remnants are not isolated trees or clumps.*

Polygons within which most or all of the trees have been cleared (referred to as secondary grassland) also constitute the NC Act listed community, provided:

- *Yellow Box and/or Blakely's Red Gum are estimated to have previously been the dominant or co-dominant species; and*
- *the groundstorey is predominately native; and*
- *a moderate diversity of native groundstorey species is present.*

Based on the above criteria, the area which meets the NC Act definition is consistent with that meeting the EPBC Act definition (i.e. PCT-ACT16 Zone 1). The understorey of Zone 2 and Zone 4 are exotic pasture, and whilst predominantly native, Zone 3 does not support a '*moderate diversity of native groundstorey species'.*

2.3 Threatened Flora Occurrence

No EPBC Act and/or NC Act listed threatened flora species were recorded in the study area during the field survey, nor are any identified as occurring in the study area on ACTMAPi or Canberra Nature Map. As detailed in the Likelihood of Occurrence Assessment (refer Appendix A), the history of high intensity grazing, pasture improvement, and other disturbance, is likely to preclude the persistence of any threatened or rare flora species in the study area.

[6] ACT Government (1999). *Yellow Box – Red Gum Grassy Woodland: An endangered ecological community. Action Plan No. 10.* Environment ACT, Canberra.
[7] ACT Government (2004). *Woodlands for Wildlife: ACT Lowland Woodland Conservation Strategy. Action Plan No. 27*. Environment ACT, Canberra.

2.4 Fauna Habitat and Threatened Fauna Occurrence

As recorded during the survey, the study area supports the following fauna habitat features.

- 268 mature remnant eucalypt trees (199 Blakely's Red Gum and 69 Yellow Box). Many of these trees are over 100 years old, and a few of them are over 200 years old. Most of these trees contain numerous hollows which would provide nesting/roosting habitat to a variety of native birds, insectivorous bats, and arboreal mammals. As shown in Figure 5, during the field survey a pair of Gang-gang Cockatoos *Callocephalon fimbriatum* was observed inspecting hollows in a dead Blakely's Red Gum tree. Several pairs of more common parrot species (i.e. Eastern Rosella *Platycercus eximius*, Crimson Rosella *Platycercus elegans*, Galah *Eolophus roseicapilla*, Red-rumped Parrot *Psephotus haematonotus*) were also observed nesting in hollows in the trees.

- The study area's remnant eucalypts would provide a nectar resource for a range of honeyeaters and other nectivorous birds and mammals when in flower. The mistletoe on some of these trees would also provide a potentially important nectar resource. As shown in Figure 5, two of these trees were also observed to support active nests of the Coconut Ant *Papyrius nitidus*, the host species which is essential to the survival of the nationally rare Small Ant-blue Butterfly *Acrodipsas myrmecophila*.

- In addition to many common native birds, several EPBC Act and/or NC Act listed birds, and numerous other species considered conservation dependant in the region, may forage and potentially breed in the study area, including Dusky Woodswallow *Artamus cyanopterus cyanopterus*, Speckled Warbler *Chthonicola sagittata*, Spotted Harrier *Circus assimilis*, Brown Treecreeper *Climacteris picumnus victoriae*, Varied Sittella *Daphoenositta chrysoptera* (vulnerable, NC Act), White-fronted Chat *Epthianura albifrons*, Little Eagle *Hieraaetus morphnoides*, Hooded Robin *Melanodryas cucullate cucullate,* Scarlet Robin *Petroica boodang*, Flame Robin *Petroica phoenica* and Diamond Firetail *Stagonopleura guttata*. Again, the remnant trees are the primary habitat feature in the study area of potential value to such species.

- With the exception of the regeneration present in the southeast patch of Box-Gum Woodland, the garden plantings, and the scattered Orange Firethorn and Briar Rose *Rosa Rubiginosa*, the midstorey and shrubstorey is largely absent throughout the study area. This is likely to limit the habitat value of the study area for most of the region's threatened and rare woodland birds which generally prefer to inhabit woodland with such features.

- Most of the study area is characterised by a groundstorey dominated by exotic pasture grasses and forbs, these being closely grazed by stock (horses and sheep at the time of survey), Eastern Grey Kangaroos *Macropus giganteus*, and European Rabbits *Oryctolagus cuniculus*. The few small areas with a substantial native component contain only grazing tolerate native grasses and forbs, these being similarly closely grazed. The exotic and native pasture in the study area is unlikely to be of substantial value to any threatened fauna species.

- Notwithstanding their low likelihood of supporting threatened reptile species, based on their location in highly modified pasture and low density of loose surface rocks, the patches of surface rock were surveyed during the September survey. No threatened species were recorded, however these patches and the rocky drainage line in the southeast of the study area, are likely to provide habitat for several common reptile species (including the Eastern Bearded Dragon *Pogona barbata* and Eastern Brown Snake *Pseudonaja textilis* recorded basking during the September field survey) and numerous invertebrates.

2.5 Pest Plants

Seventeen (17) exotic plant species were recorded in the study area. Whilst the majority of these are common weeds across the agricultural land throughout the region, the species in Table 3 are listed as Weeds of National Significance (Commonwealth) and/or are listed as declared pest plant species in the ACT.

Table 3. Noxious weed occurrence

Key for below table

- WoNS - (Commonwealth) Weed of National Significance
- Declared pest plant species in the ACT listed under the *Pest Plants and Animals (Pest Plants) Declaration 2005*
  - Must be supressed
  - Must be contained
  - Prohibited
  - Notifiable

Name	Growth Form	Status	Description of Occurrence	Threat Level
Echium plantagineum **Paterson's Curse**	Forb <1.2 m	Must be contained	Scattered plants across all zones.	Low
Eragrostis curvula **African Love Grass**	Tussock <1.2 m	Must be contained	Generally occurring along the boundaries adjoining Narrabundah Lane and Mugga Lane.	High – In the absence of concerted control the currently limited infestation will continue to spread throughout the study area.
Hypericum perforatum **St John's Wort**	Forb <1 m	Must be contained	Numerous scattered plants, primarily in the less intensively grazed ACT16 - Zone 1.	High
Nassella trichotoma **Serrated Tussock**	Tussock <0.6 m	WoNS, Must be contained / prohibited	Few small tussocks ACT16 - Zone 1.	High – control measures are required to prevent the current low to moderate infestation from proliferating within the study area.
Pinus radiata **Radiata Pine**	Large tree	Must be contained	Planted trees in patches around the periphery of the study area. No evidence of self-seeding was observed within the study area.	Low
Pyracantha angustifolia **Orange Firethorn**	Shrub <4 m	Prohibited	Planted as hedges, also self-sown along drainage lines in the north and south of the study area.	Moderate – Control of this species is recommended to prevent its proliferation within the study area.

Name	Growth Form	Status	Description of Occurrence	Threat Level
Rosa rubiginosa **Briar Rose**	Shrub <3 m	Must be suppressed / Prohibited	Few plants occur along the creek in the north of the study area.	Moderate – Control of this species is recommended to prevent its proliferation within the study area.
Rubus fruticosis **Blackberry**	Shrub/bramble <3 m	WoNS, Must be contained / prohibited	Few plants occur along the creek in the north of the study area.	Moderate – The infestation is currently at low levels but should be controlled to prevent proliferation of the species within the study area.
Vinca major **Blue Periwinkle**	Forb <0.5 m	Prohibited	Large patch along driveway off Mugga Lane.	Moderate – Control of this species is recommended to prevent its proliferation within the study area.

2.6 Pest Animals

The exotic pest species European Rabbit, Red Fox *Vulpes vulpes*, European Brown Hare *Lepus europaeus*, Common Myna *Acridotheres tristis*, House Sparrow *Passer domesticus*, and Common Starling were recorded in the study area during the surveys. Each of these species is commonly encountered on such peri-urban sites, however the rabbit infestation is relatively severe with several active warrens observed along the drainage line in the north of the study area. Control of these rabbits via warren fumigation will occur prior to sale of the newly created blocks.

3. Measures to Avoid and Mitigate Impacts on Biodiversity

A number of measures have been incorporated into the design of the proposed subdivision in order to avoid or reduce impacts on the ecological values of the study area, these are described below.

Avoidance of the EPBC Act / NC Act Box-Gum Woodland

As shown in Figure 5, the new block boundaries have been located to avoid bisecting the large patch of EPBC Act / NC Act Box-Gum Woodland. The proposed right-of-way has similarly been located so as to avoid the patch. The two existing driveway access points off Narrabundah Lane which currently bisect the Box-Gum Woodland patches will also be removed.

Retention of Remnant Trees

The new block boundaries will be fenced with standard rural stock fences. These boundaries have been located in a manner that will not require removal of, or other impacts to, any of the study area's remnant eucalypt trees. Similarly, the two rights-of-ways to be established will not impact any remnant trees.

It is noted that the remnant trees shown in Figures 3 and 5 were recorded via hand-held GPS which is accurate to +/- 3 m. Accordingly, a detailed survey will be required to accurately record the location of the remnant trees. This survey will be completed prior to finalisation of the boundary alignments, thereby allowing fine scale adjustment of boundaries to avoid impacts to remnant trees.

Pest Plant and Animal Management

A weed control program will be developed and implemented to address the existing significant weeds in the study area (refer Section 2.5). This program will focus on initial intensive treatment to remove the current weeds prior to sale of the newly created blocks.

A contractor will be engaged to treat the rabbit warrens in the study area. It is envisaged that fumigation will be used to exterminate the rabbits in the active warrens. Ripping of warrens is not recommended as most of the warrens occur along the drainage line in the north of the study area which is already substantially eroded in places.

4. Summary of Proposed Impacts

As detailed herein and shown in Figure 5, the proposed development will locate block boundaries, right-of-ways, and new access points in a manner that will:

- avoid impacts to EPBC Act / NC Act Box-Gum Woodland;
- avoid removal or other impacts to remnant eucalypt trees;
- locate only a single approx. 100 m segment of new boundary fence through a Vegetation Zone with a native dominant groundstorey (this being ACT16-Zone 3, which is highly modified native pasture).

The proposed development will remove the two existing driveway access points off Narrabundah Lane which currently bisect the Box-Gum Woodland patches.

As detailed in this EIA, the significant values of the study area are the patches of EPBC Act / NC Act Box Gum Woodland and the 268 mature remnant eucalypt trees. The proposed development has been

designed in a manner that entirely avoids direct impacts to these values. Whilst the creation of smaller blocks will increase the number of parties utilising the land, it is unlikely that the proposed development could increase the intensity of land use from that which been applied for the last several decades.

In light of the above, and with reference to the EPBC Act Significant Impact Guidelines[8] and relevant ACT Action Plans and guidelines, the proposed development is unlikely to significantly impact any EPBC Act and/or NC Act listed threatened flora or fauna species or ecological communities. Implementation of the avoidance and mitigation measures detailed in Section 3 will ensure that impacts on the biodiversity of the study area and locality are minimised.

5. Legislative Requirements

5.1 Commonwealth

5.1.1 Environment Protection and Biodiversity Conservation Act 1999

The Commonwealth EPBC Act requires that proposed 'actions' be assessed in terms of their potential to impact upon 'Matters of National Environmental Significance' (MNES) as defined under the Act.

Where a potential impact on a MNES may occur as a result of a proposed action, the significance of that impact must be assessed. Guideline criteria for determining whether an impact is significant are provided under the Act. Where a proposed action will, or is likely to, have a significant impact on a MNES, the proposed action must be referred to the Commonwealth Minister for the Environment. The purpose of the referral is to determine whether a proposed action requires approval and/or controls under the EPBC Act.

With regard to the above, it is unlikely that the proposed development will have a significant impact on a MNES given that:

- the proposed subdivision has been designed in a manner that will avoid impacts to the EPBC Act listed Box-Gum Woodland;
- the study area is unlikely to support any EPBC Act listed flora species; and
- the vegetation to be impacted (i.e. groundstorey of highly modified exotic or native pasture) is unlikely to be of potential importance to EPBC Act listed threatened or migratory fauna species.

In light the above, EPBC Act referral is unwarranted and is not recommended.

5.2 Australian Capital Territory

5.2.1 Planning and Development Act 2007

Pursuant to the ACT *Planning and Development Act 2007* (P&D Act), a development proposal will be assessed via the 'impact track' and require the preparation of an Environmental Impact Statement (EIS) if the development will have any of the impacts listed under Parts 4.2 and 4.3 of Schedule 4 of the Act.

The ecological impacts that trigger the requirement to prepare an EIS of relevance to the proposed development are detailed below, together with an assessment of the proposed development against

[8] Commonwealth of Australia (2013). *Matters of National Environmental Significance - Significant Impact Guidelines 1.1. Environment Protection and Biodiversity Conservation Act 1999*. Commonwealth Department of the Environment.

each of these triggers. The ecological impacts that trigger the requirement to prepare an EIS, of relevance to the proposal are:

> ***Item 1.*** *Proposal that is likely to have a significant adverse environmental impact on 1 or more of the following, unless the conservator of flora and fauna provides an environmental significance opinion indicating that the proposal is not likely to have a significant adverse environmental impact:*
>
> *(a) a critically endangered species;*
>
> *(b) an endangered species;*
>
> *(c) a vulnerable species;*
>
> *(d) a conservation dependent species;*
>
> *(e) a regionally threatened species;*
>
> *(f) a regionally conservation dependent species;*
>
> *(g) a provisionally listed threatened species;*
>
> *(h) a listed migratory species;*
>
> *(i) a threatened ecological community;*
>
> *(j) a protected native species;*
>
> *(k) a Ramsar wetland;*
>
> *(l) any other protected matter*

The proposed development will avoid clearance of NC Act endangered listed Box-Gum Woodland and will avoid impacts to any of the remnant eucalypts which may be of habitat value to NC Act listed birds. Accordingly, the proposed development is unlikely to have a 'significant adverse environmental impact' upon NC Act listed protected values.

> ***Item 2.*** *Proposal involving—*
>
> *(a) the clearing of more than 0.5ha of native vegetation in a native vegetation area, other than on land that is designated as a future urban area under the territory plan, unless the conservator of flora and fauna produces an environmental significance opinion that the clearing is not likely to have a significant adverse environmental impact*

Pursuant to the NC Act, native vegetation is defined as present if:

- *trees or shrubs indigenous to the area have a canopy cover of 10% or greater in any stratum; or*
- *native plants indigenous to the area comprise 50% or more of the cover of the groundstorey (grasses, small shrubs, forbs, sedges etc.).*

According to this definition, the zones that constitute native vegetation within the study area are PCT-ACT16:

- Zone 1 as it has >10% canopy, >10% regeneration as shrubstorey/midstorey, and >50% native groundstorey cover;

- Zone 2 as it has >10% canopy; and
- Zone 3 as it has >50% native groundstorey cover.

Given that the proposed development will avoid Zone 1 and avoid clearing trees in Zone 2, it is envisaged that the only impacts to native vegetation will be that for the establishment of a stock fence for approx. 100 m through Zone 3. This is unlikely to result in actual clearance of native vegetation.

It is reasonable to conclude that with the implementation of the proposed avoidance and mitigation measures (refer Section 3), the proposed subdivision is unlikely to involve the clearance of any native vegetation.

In light the above, the proposed development does not trigger the requirement to prepare an EIS due to impacts on ecological values.

5.2.2 Tree Protection Act 2005

As detailed herein, the proposed development has been designed in a manner that will avoid impacts to the study area's remnant trees. However, whilst of little ecological value, the planted native and exotic trees in the study area may be considered valuable from an aesthetic and intrinsic values perspective. In this regard, it is noted that any tree over 12 metres in height and/or 1.5 m in circumference qualifies as a protected (Regulated) tree under the ACT *Tree Protection Act 2005* (TP Act). Accordingly, should any such trees be proposed for clearance (or impacts be proposed within their 'tree protection zone'), advice should be sought from the ACT Conservator regarding requirements for approval under the TP Act.

5.2.3 Pest Plants and Animals Act 2005

Nine (9) species listed on the *ACT Pest Plants and Animals (Pest Plants) Declaration 2015 (no 1)* under the ACT *Pest Plants and Animals Act 2005*, were recorded within the study area (refer Table 3). Works for the proposed development have the potential to increase the spread and/or dominance of significant weed species, however, as described in Section 3, the implementation of appropriate weed control measures is proposed to be to prevent weed spread and/or proliferation within the study area and surrounds.

As noted in Section 2.6, the study area contains a substantial rabbit infestation with several active warrens observed along the drainage line in the north of the study area. Control of these rabbits via warren fumigation will occur prior to sale of the newly created blocks.

Conclusion

As detailed herein and illustrated in Figure 5, the proposed development has been designed in a manner that largely avoids native vegetation clearance and associated biodiversity impacts. In summary, the proposed development:

- will not impact any EPBC Act and/or NC Act listed threatened ecological community;
- will avoid clearance of, or other direct impacts to, any of the 268 remnant eucalypts in the study area;
- will largely avoid clearance of native vegetation;

- is unlikely to impact any EPBC Act and/or NC Act listed threatened flora species (or species considered 'rare and uncommon' in the ACT); and
- is unlikely to significantly impact any EPBC Act and/or NC Act listed threatened or migratory fauna species (or species considered conservation dependant in the region).

In light of the above, based on our assessment:

- EPBC Act referral is unwarranted and is not recommended; and
- the requirement to prepare an EIS is not triggered for the proposed development.

We trust that this EIA provides the assessment and advice required. If, however, you should have any questions relating to any of the matters discussed herein, please do not hesitate to contact us.

Yours sincerely,

Robert Speirs

Director / Principal Ecologist

Dr Sam Reid

Consultant Ecologist

Attachments:

Figure 1. Locality Plan

Figure 2. Study Area and Proposed Development on Aerial Image

Figure 3. Current Remnant Trees on 1955 Aerial Image

Figure 4. Vegetation Mapping

Figure 5. Ecological Values and Proposed Development

Appendix A. Likelihood of Occurrence Assessment

Appendix B. Vegetation Survey Results Tables

References

ACT Government (1999). *Yellow Box – Red Gum Grassy Woodland: An endangered ecological community.* Action Plan No. 10. Environment ACT, Canberra.

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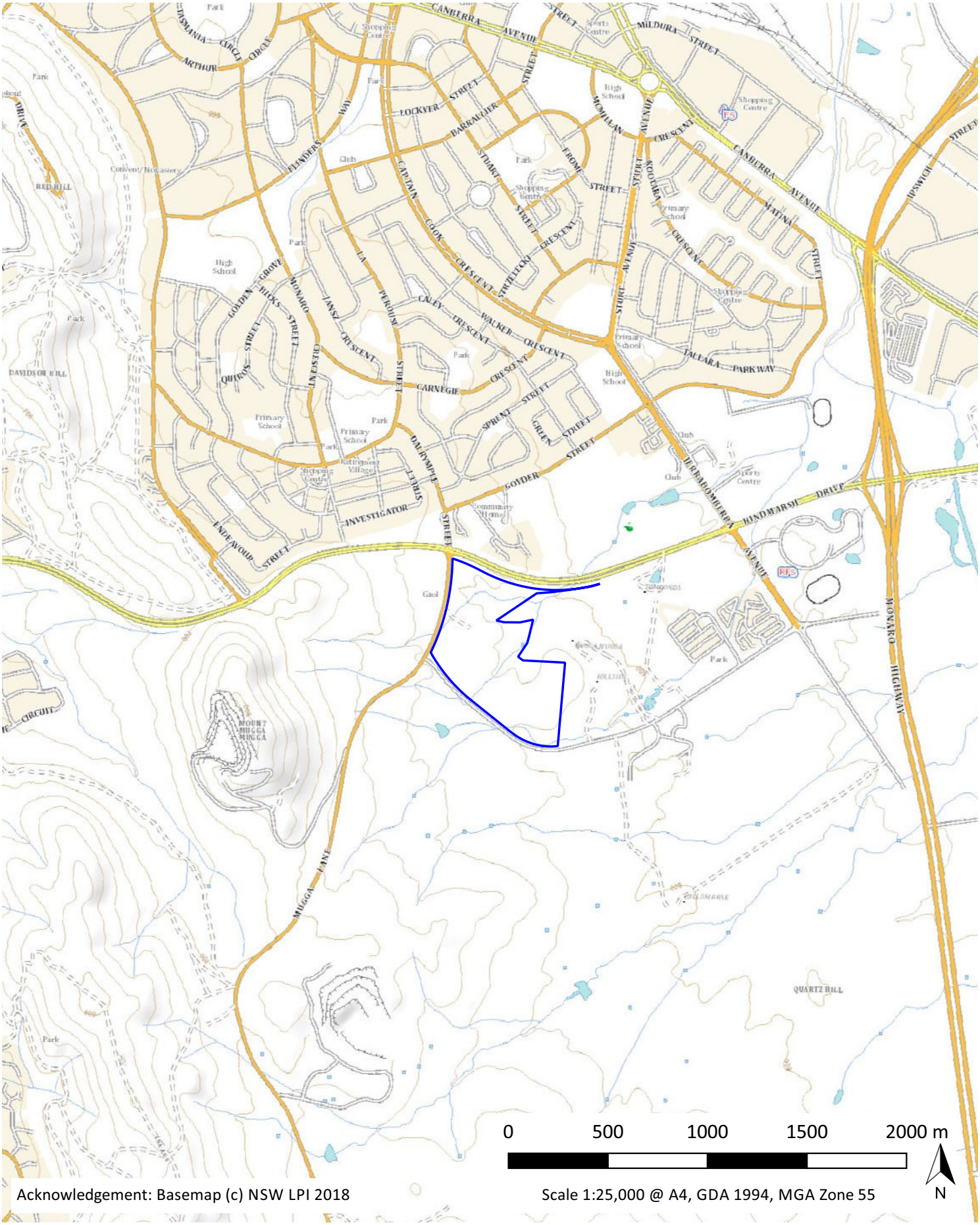

Acknowledgement: Basemap (c) NSW LPI 2018

Scale 1:25,000 @ A4, GDA 1994, MGA Zone 55

Figure 1. Locality Plan

Legend

Study Area - Block 5 Section 103

Capital Ecology Project No: 2827
Drawn by: R. Speirs
Date: 18 September 2018

Figure 2. Study Area and Proposed Development on Aerial Image

Capital Ecology Project No: 2827
Drawn by: R. Speirs
Date: 18 September 2018

Legend

- Study Area - Block 5 Section 103
- Proposed Subdivsion Boundaries
- Proposed Access Easements

capital ecology

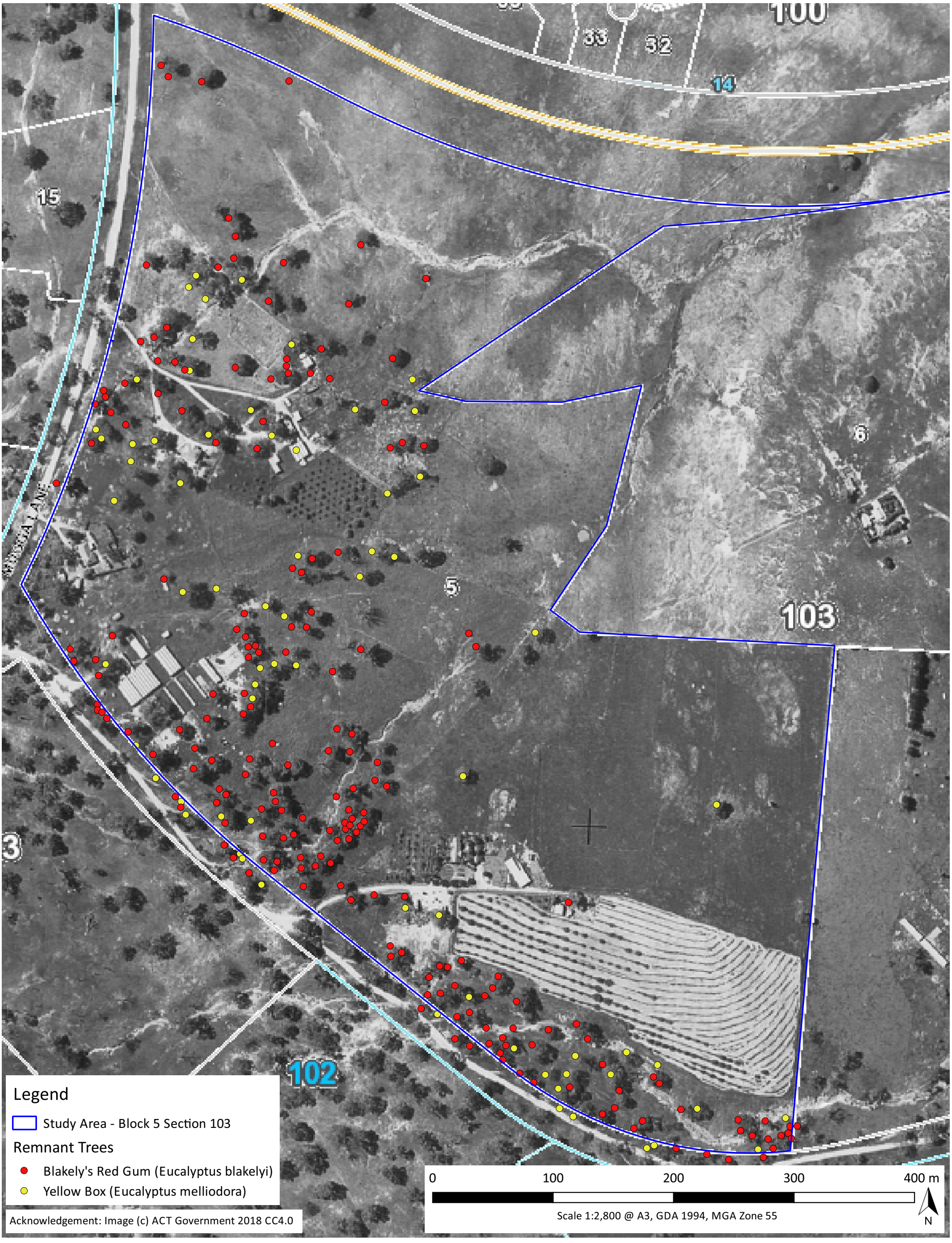

Figure 3. Current Remnant Trees on 1955 Aerial Image

Capital Ecology Project No: 2827
Drawn by: R. Speirs
Date: 18 September 2018

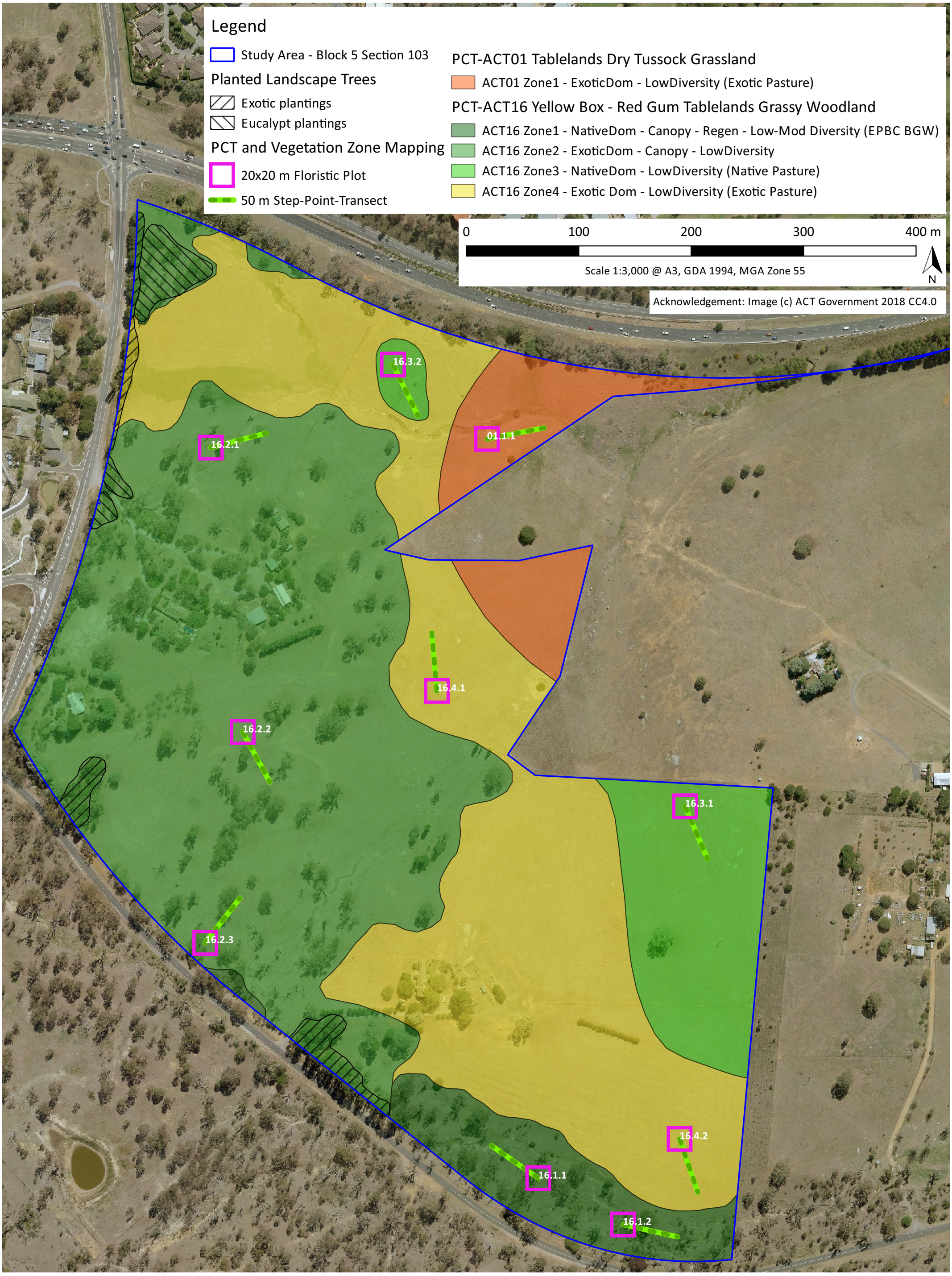

Figure 4. Vegetation Mapping

Capital Ecology Project No: 2827
Drawn by: R. Speirs
Date: 18 September 2018

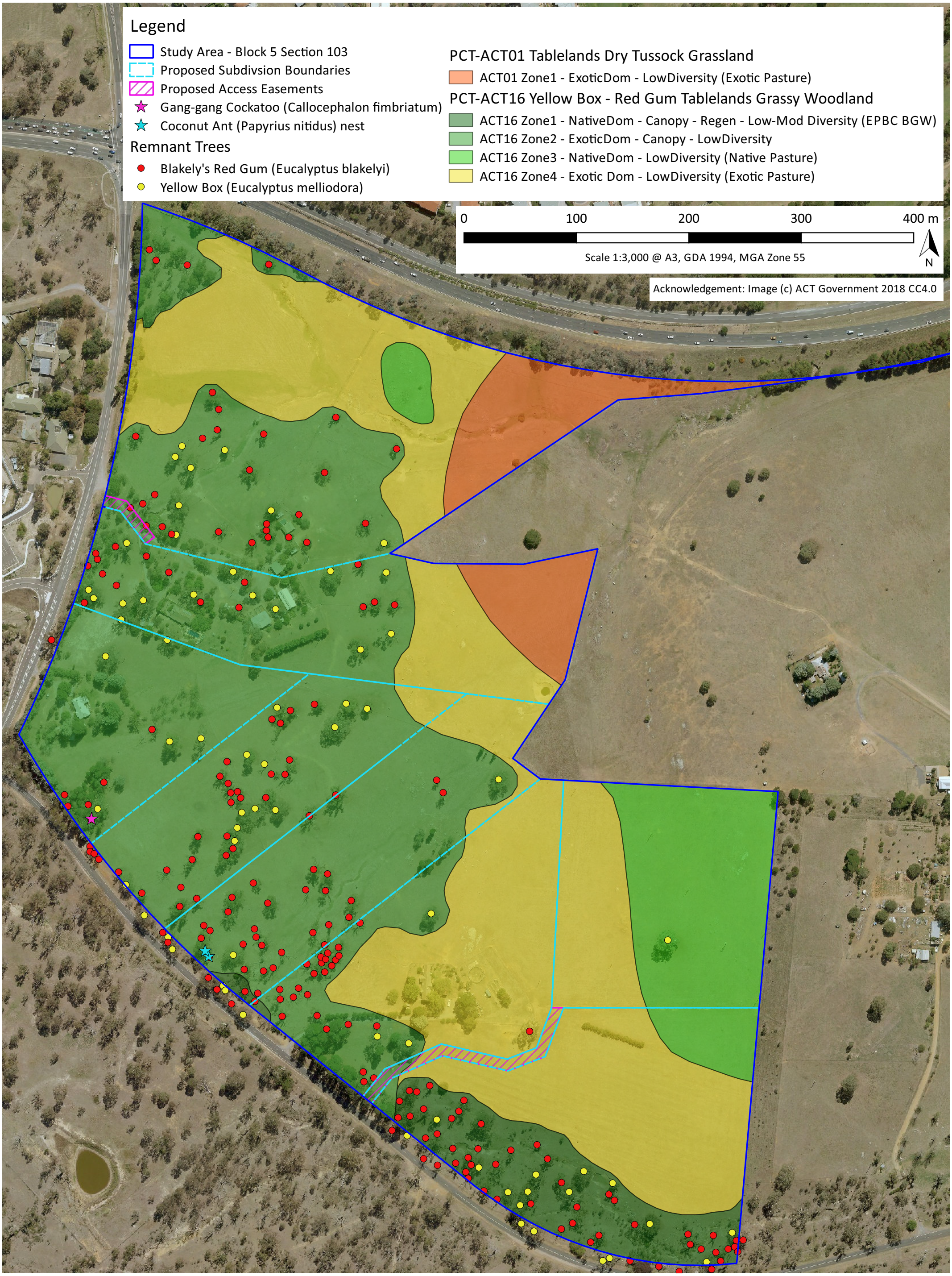

Figure 5. Ecological Values and Proposed Development

Capital Ecology Project No: 2827
Drawn by: R. Speirs
Date: 18 September 2018

Appendix A. Likelihood of Occurrence Assessment

Species Name	EPBC Act Status	NC Act Status	Description (Distribution and Habitat)	Likelihood of Occurrence/Impact
Plants				
Ammobium craspedioides Yass Daisy	V	-	The Yass Daisy is a perennial herb that bears large yellow flowerheads, with each flowerhead supported by a 30-60 cm stem. It is found from Crookwell (north of Goulburn) to near Wagga Wagga, with most populations occurring in the Yass District. The Yass Daisy occurs in dry forest, Box-Gum Woodland and secondary derived grassland of these communities. It tolerates light grazing and areas that are irregularly mown or slashed. Flowering occurs from October to November.	Negligible The species is not known to occur in the locality and was not recorded during field surveys. Furthermore, the grassy woodland within most of the study area is too modified to constitute potential habitat and the species.
Amphibromus fluitans River Swamp Wallaby-grass	V	-	River Swamp Wallaby-grass has been recorded along the Lachlan River at sites at Laggan near Crookwell and the headwaters of the Wollondilly River. The species grows mostly in permanent swamps, as well as lagoons, billabongs, dams and roadside ditches. The species requires moderately fertile soils with some bare ground, such conditions being caused by seasonally-fluctuating water levels.	Negligible There is no potential habitat in the study area for the species.
Caladenia actensis Canberra Spider Orchid	CE	E	This orchid is endemic to the ACT and is only known from two populations on the western lower slopes of Mount Ainslie and Mount Majura. It was previously recorded at Aranda and Campbell, but no longer exists at those locations. The Canberra Spider Orchid grows on shallow, gravelly, brown clay loam soils. The species occurs amongst a groundcover of grasses, forbs and low shrubs, often among rocks. It grows on the transition zone (ecotone) between grassy woodland and dry sclerophyll forest.	Low The species is not known to occur near the study area, no portions of the study area transition from grassy woodland to dry sclerophyll forest, and the species was not recorded during the field surveys.

Species Name	EPBC Act Status	NC Act Status	Description (Distribution and Habitat)	Likelihood of Occurrence/Impact
Dodonaea procumbens Trailing Hop-bush	V	-	Trailing Hop-bush is found in the dry areas of the Monaro, between Michelago and Dalgety where it occurs mostly in Natural Temperate Grassland or Snow Gum *Eucalyptus pauciflora* Woodland. A single known population occurs at Lake Bathurst (the northern-most occurrence of the species) where it occurs adjacent to the lake bed in grassland dominated by Corkscrew Grass *Austrostipa scabra* and Curly Sedge *Carex bichenoviana*. The species grows on sandy-clay soils in open bare patches where there is little competition from other species. The species often occurs on roadside batters and does not persist in heavily grazed pastures.	Negligible There is no potential habitat in the study area for the species.
Eucalyptus aggregata Black Gum	V	-	Black Gum occurs on the central and southern tablelands of NSW, and in a small disjunct population in Victoria. In NSW, it occurs predominantly in the South Eastern Highlands Bioregion. The species is a small to medium-sized woodland tree which grows in grassy woodlands on alluvial soils in moist sites along creeks on broad, cold and poorly-drained flats and hollows. It commonly occurs with Candlebark *Eucalyptus rubida*, Ribbon Gum *E. viminalis*, and Snow Gum *E. pauciflora*, with a grassy understorey of River Tussock *Poa labillardieri*. Most populations are located on private land or road verges and travelling stock routes.	Negligible The species is not present in the study area.
Lepidium ginninderrense Ginninderra Peppercress	V	E	The species is known from two natural sites in northern ACT, both within Natural Temperate Grassland.	Negligible There is no potential habitat in the study area for the species.
Lepidium hyssopifolium Basalt Peppercress	E	-	This species is known from a few populations in NSW, Victoria and Tasmania. The Basalt Pepper-cress is known to establish on open, bare ground with limited competition from other plants. It was previously recorded from Eucalypt woodland with a grassy ground cover, low open Casuarina woodland with a grassy ground cover and tussock grassland. Recently recorded localities have predominantly been in weed-infested areas of heavy modification, high degradation and high soil disturbance such as road and rail verges, on the fringes of developed agricultural land or within small reserves in agricultural land. Many populations are now generally found amongst exotic pasture grasses and beneath exotic trees.	Low The species is not known to occur near the study area and was not recorded during the field surveys.

Species Name	EPBC Act Status	NC Act Status	Description (Distribution and Habitat)	Likelihood of Occurrence/Impact
Leucochrysum albicans var. *tricolor* Hoary Sunray	E	-	The Hoary Sunray occurs from Queensland to Victoria and in Tasmania. In the ACT the species can be seen in spring in abundance on the roadside along Fairbairn Avenue and into Mt Ainslie Nature Reserve, on the western slopes of Mt Majura and adjacent to the Federal Highway road easement. The species is usually found in ungrazed and lightly grazed areas, along roadsides in particular. It appears to be very sensitive to grazing but responds to disturbance as a coloniser and appears to tolerate mowing. Flowers spring to summer.	Low While the species is known to occur near the study area, it was not recorded during field surveys despite being conspicuous throughout the year when present. It is unlikely that the species is present and was not identified. Furthermore, the study area has been highly disturbed in the past and is heavily grazed, lowering the likelihood that the species is present.
Pelargonium sp. Striatellum Omeo Stork's-bill	E	-	An undescribed species of Pelargonium, Omeo Stork's Bill is a tufted perennial herb threatened by grazing, recreational activities, and exotic species. It is known to occur just above the high-water level of ephemeral lakes in NSW and Victoria.	Negligible There is no potential habitat in the study area for the species.
Pomaderris pallida Pale Pomaderris	V	-	A compact perennial shrub, growing to 1.5 m high. It is found in the ACT, southern NSW and eastern Victoria. In the ACT it is scattered along the Cotter, Paddy's and Murrumbidgee Rivers and through the Molonglo Gorge. It is found along the plateau edge and very steep upper slopes and cliffs of river valleys, in shallow, pale brown sandy loam soil over granite rock. It grows in shrubland, surrounded by *Eucalyptus* or *Callitris* woodland. In the ACT, it is only found on the eastern banks of the rivers.	Negligible The species is not known to occur near the study area. Furthermore, the species is reasonably conspicuous during any season to those familiar with it. It is unlikely that the species is present and was not identified.

Species Name	EPBC Act Status	NC Act Status	Description (Distribution and Habitat)	Likelihood of Occurrence/Impact
Prasophyllum petilum Tarengo Leek Orchid	E CE (listed as *Prasophyllum* sp. Wybong)	E	When first described in 1991, the Tarengo Leek Orchid was known only from the Hall Cemetery in the ACT. It has since been found at four sites in New South Wales: Captains Flat Cemetery, Ilford Cemetery, Steves Travelling Stock Route (TSR) at Delegate and the Tarengo TSR near Boorowa. The Tarengo Leek Orchid occurs on relatively fertile soils in grassy woodland or natural grassland. The three cemetery sites originally contained grassy woodland, dominated by Snow Gum *Eucalyptus pauciflora* and Black Gum *E. aggregata* at Captains Flat, and Blakely's Red Gum *E. blakelyi* and Yellow Box *E. melliodora* at Hall and Ilford. Both Tarengo TSR and Steves TSR are natural grasslands. The species is intolerant of grazing and this is considered to be the key reason it has been found only within cemeteries and TSRs, land from which grazing has been restricted.	Negligible The grassy woodland in the study area is too modified to constitute potential habitat.
Rutidosis leptorrhynchoides Button Wrinklewort	E	E	In the ACT and NSW, Button Wrinklewort occurs in box-gum woodland, secondary grassland derived from box-gum woodland or in natural temperate grassland. It prefers open spaces where it does not have to compete for light. It is known from several sites in the ACT, NSW and Victoria, where it is threatened by habitat loss, grazing and weed encroachment.	Negligible The species was not recorded during field surveys despite being conspicuous throughout the year when present. It is unlikely that the species is present and was not identified. Furthermore, the study area has been highly disturbed in the past and is heavily grazed, lowering the likelihood that the species is present
Swainsona recta Small Purple-pea	E	E	The Small Purple-pea occurs in the grassy understorey of woodlands and open forests dominated by Blakely's Red Gum, Yellow Box, Candlebark and Bundy. The species grows in association with understorey dominants that include Kangaroo Grass, Poa tussocks and Spear-grasses. Plants die back in summer, surviving as rootstocks until they shoot again in autumn. The species is intolerant of grazing but generally tolerant of fire, which also	Negligible The majority of the woodland component of the study area is too modified/disturbed to constitute potential habitat for this species. The species was

Species Name	EPBC Act Status	NC Act Status	Description (Distribution and Habitat)	Likelihood of Occurrence/Impact
			enhances germination by breaking the seed coat and reducing competition from other species.	not recorded during the field surveys.
Thesium australe Austral Toadflax	V	-	Found in very small to large populations scattered across eastern NSW, along the coast, and from the Northern to Southern Tablelands. Austral Toadflax is a root parasite that takes water and some nutrients from other plants, especially Kangaroo Grass. It is often found in damp sites in association with Kangaroo Grass, but it is also found on other grass species at inland sites. Occurs on clay soils in grassy woodlands or coastal headlands.	Negligible The study area is unlikely to constitute potential habitat for this species. The grassy woodland is too modified and the usual host species are not present.
Mammals				
Chalinolobus dwyeri Large-eared Pied Bat	V	-	The Large-eared Pied Bat is found mainly in areas with extensive cliffs and caves, from Rockhampton in Queensland south to Bungonia in the NSW Southern Highlands. It is generally rare with a very patchy distribution in NSW. The species roosts in caves, crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin *Petrochelidon ariel*. The species frequents low to mid-elevation dry open forest and woodland close to roosts and is often found in well-timbered areas containing gullies.	Low No potential roosting habitat is present in the study area or nearby. As the species is known to forage close to roost sites, it is unlikely to forage in the study area.
Dasyurus maculatus maculatus Spot-tailed Quoll (SE mainland population)	E	V	The Spot-tailed Quoll occurs along the east coast of Australia and the Great Dividing Range. The species uses a range of habitats including sclerophyll forests and woodlands, coastal heathlands and rainforests. Occasional sightings have been made in open country, grazing lands, rocky outcrops and other treeless areas. Habitat requirements include suitable den sites, including hollow logs, rock crevices and caves, an abundance of food and an area of intact vegetation in which to forage. Seventy per cent of the diet is medium-sized mammals, and also feeds on invertebrates, reptiles and birds. Individuals require large areas of relatively intact vegetation through which to forage. The home range of a female is between 180 and 1000ha, while males have larger home ranges of between 2000 and 5000ha. Breeding occurs from May to August.	Low The majority of the study area is too heavily modified to constitute significant habitat for the species, which is also unlikely to occur in the locality.

Species Name	EPBC Act Status	NC Act Status	Description (Distribution and Habitat)	Likelihood of Occurrence/Impact
Petauroides Volans Greater Glider	V	-	The greater glider is restricted to eastern Australia, occurring from the Windsor Tableland in north Queensland through to central Victoria, with an elevational range from sea level to 1200 m above sea level. The greater glider is an arboreal nocturnal marsupial, largely restricted to eucalypt forests and woodlands. It is primarily folivorous, and is typically found in highest abundance in taller, montane, moist eucalypt forests with relatively old trees and abundant hollows. The greater glider favours forests with a diversity of eucalypt species, due to seasonal variation in its preferred tree species	Negligible The study area does not contain potential habitat for the species.
Petrogale penicillate Brush-tailed Rock-wallaby	V	E	The Brush-tailed Rock-wallaby was once widespread in south-eastern Australia, but its range and numbers have contracted, particularly in Victoria and southern NSW. The last sighting of this species in the ACT was in Tidbinbilla Nature Reserve in 1959. Populations are comprised of small, isolated groups or 'colonies'. Each colony may occupy a territory of up to 35 ha. The species prefers rocky habitats/outcrops and steep slopes/cliffs, combined with dense arboreal cover. They are associated with rainforest, wet and dry sclerophyll forest, vine thicket, and open forest.	Negligible The species is not known to occur in the lowland/urban areas of the ACT.
Phascolarctos cinereus Koala (combined populations of Qld, NSW and the ACT)	V	-	In NSW, the Koala mainly occurs on the central and north coasts with some populations in the western region. Koalas feed almost exclusively on eucalypt foliage, and their preferences vary regionally. They are solitary with varying home ranges. In high quality habitat home ranges may be 1 -2 ha and overlap, while in semi-arid country they are usually discrete and around 100 ha.	Negligible The species is not known to occur in the lowland/urban areas of the ACT.
Pteropus poliocephalus Grey-headed Flying Fox	V	-	The Grey-headed Flying Fox occurs in the coastal belt from Rockhampton in central Queensland to Melbourne in Victoria. Whilst Brisbane, Newcastle, Sydney and Melbourne are occupied continuously, the species is widespread throughout their range during summer. In autumn the species occupies coastal lowlands and is uncommon inland. In winter the species congregates in coastal lowlands north of the Hunter Valley and is occasionally found on the south coast of NSW and on the northwest slopes (associated with flowering eucalypts of these areas).	Low The species may periodically forage within the study area on flowering eucalypts, however the study area is highly unlikely to contain habitat of significance to the species. The study area is not located near any known camps.

Species Name	EPBC Act Status	NC Act Status	Description (Distribution and Habitat)	Likelihood of Occurrence/Impact
			The Grey-headed Flying-fox requires foraging resources and roosting sites. It is a canopy-feeding frugivore and nectarivore, which utilises vegetation communities including rainforests, open forests, closed and open woodlands, Melaleuca swamps and Banksia woodlands. The Grey-headed Flying-fox roosts in aggregations of various sizes on exposed branches. Roost sites are typically located near water, such as lakes, rivers or the coast. The roost at Commonwealth Park in Canberra is the only known roost in the ACT region.	
Birds				
Anthochaera phrygia Regent Honeyeater	E	E	A semi-nomadic species occurring in temperate eucalypt woodlands and open forests. Most records are from box-ironbark eucalypt forest associations and wet lowland coastal forests. Key eucalypt species include Mugga Ironbark, Yellow Box, Blakely's Red Gum, White Box and Swamp Mahogany. It also utilises a number of other eucalypt species. Nectar and fruit from the mistletoes *Amyema miquelii*, *A. pendula*, and *A. cambagei* are also eaten during the breeding season. Regent Honeyeaters usually nest in horizontal branches or forks in tall mature eucalypts and sheoaks as well as within mistletoe haustoria (section of the root which connects with the host tree). An open cup-shaped nest is constructed by the female of bark, grass, twigs and wool.	Low The species may periodically visit the study area to forage, however it is not known to nest in the locality.
Botaurus poiciloptilus Australasian Bittern	E	-	Australasian Bitterns are widespread but uncommon over south-eastern Australia. In NSW they may be found over most of the state except for the far north-west. Favours permanent freshwater wetlands with tall, dense vegetation, particularly bullrushes (Typha spp.) and spikerushes (Eleocharis spp.). Hides during the day amongst dense reeds or rushes and feed mainly at night on frogs, fish, yabbies, spiders, insects and snails.	Negligible The study area does not support potential habitat for this species.
Calidris ferruginea Curlew Sandpiper	CE	-	The Curlew Sandpiper occurs around the coast of Australia, and are also widespread inland, albeit in smaller numbers. In the south-east they are occasionally recorded in the Tablelands and often in the Riverina. When inland, they are found around ephemeral and permanent lakes, dams, waterholes and bore drains. Curlew Sandpipers prey mainly on invertebrates, foraging on mudflats and at the edge of shallow pools, wading	Negligible The study area does not support potential habitat for this species.

Species Name	EPBC Act Status	NC Act Status	Description (Distribution and Habitat)	Likelihood of Occurrence/Impact
			up to depths of 60 mm deep. They generally roost on dry shingle or sandy beaches, sandspits, and islets. Curlew Sandpipers are migratory, and adults are found in Australia from August to April, juveniles are found year-round. This species does not breed in Australia.	
Daphoenositta chrysoptera Varied Sittella	-	V	In the ACT region, the Varied Sittella occurs in a wide variety of woodland and forest habitats, particularly in lowland areas. The species prefers areas with a dominance of rough barked trees, notably Red Stringybark at relatively high density. The species is rarely recorded in sparsely treed areas.	**Moderate** The species may visit the study area to forage and/or nest.
Grantiella picta Painted Honeyeater	V	V	The Painted Honeyeater is found in Queensland and New South Wales west of the Great Dividing Range, through to northern Victoria. The species displays some migratory movement and is occasionally found in the Northern Territory and is a vagrant to South Australia and the ACT. The species frequents eucalypt forests and woodlands, particularly those that are infested heavily with mistletoes. In the ACT, the species' primary habitat is River Oak (*Casuarina cunninghamiana*) along river systems, especially the Murrumbidgee River.	Low The species may periodically visit the study area to forage, however it is not known to nest in the locality.
Hieraaetus morphnoides Little Eagle	-	V	The Little Eagle is distributed throughout the Australian mainland excepting the most densely forested parts of the Dividing Range escarpment, and occupies habitats rich in prey within open eucalypt forest, woodland or open woodland. The species is sensitive to human disturbance.	**Moderate** The study area may be part of the range of an individual or pair of Little Eagles, but the species is unlikely to nest in the study area.
Lathamus discolor Swift Parrot	E	V	The Swift Parrot occurs in woodlands and forests of NSW (and occasionally the ACT) from May to August, where it feeds on eucalypt nectar, pollen and associated insects. The Swift Parrot is dependent on flowering resources across a wide range of habitats in its wintering grounds in NSW. This species is migratory, breeding in Tasmania and also nomadic, moving about in response to changing food availability.	Low The species may move through the study area during winter, however this is unlikely due to the paucity of records of the species in the region.

Species Name	EPBC Act Status	NC Act Status	Description (Distribution and Habitat)	Likelihood of Occurrence/Impact
Limosa lapponica baueri Bar-tailed Godwit	V	-	The Bar-tailed Godwit is a large migratory shorebird. In Australia, the species has been recorded in the coastal areas of all Australian states. It usually forages near the edge of water or in shallow water, mainly in tidal estuaries and harbours. The Bar-tailed Godwit breeds in north-east Siberia and west Alaska. Potential habitat for the species in or nearby the ACT is limited to Jerrabomberra Wetlands and Lake George.	Negligible The study area does not support potential habitat for the species.
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit	CE	-	The Northern Siberian Bar-tailed Godwit is a large migratory shorebird. In Australia, the species has been recorded in the coastal areas of all Australian states. It usually forages near the edge of water or in shallow water, mainly in tidal estuaries and harbours. The Northern Siberian Bar-tailed Godwit breeds in northern Siberia. Potential habitat for the species in or nearby the ACT is limited to Jerrabomberra Wetlands and Lake George.	Negligible The study area does not support potential habitat for the species.
Melanodryas cucullata cucullata Hooded Robin (southeastern form)	-	V	The Hooded Robin occupies drier eucalypt forest, woodland and scrub, grasses and low shrubs, as well as cleared paddocks with regrowth or stumps. The species uses stumps, posts or fallen timber from which to locate prey on the ground. In the ACT region, the species is found in woodland, often with scattered Yellow Box and/or Blakely's Red Gum, with long grass and low shrubs, or fallen logs.	**Moderate** The species may visit the study area to forage.
Numenius madagascariensis Eastern Curlew	CE	-	The eastern curlew is Australia's largest shorebird and a long-haul flyer. The eastern curlew takes an annual migratory flight to Russia and north-eastern China to breed, arriving back home to Australia in August to feed on crabs and molluscs in intertidal mudflats. It is extremely shy and will take flight at the first sign of danger.	Negligible The study area does not support potential foraging habitat for the species.
Petroica boodang Scarlet Robin	-	V	The Scarlet Robin is found in south-eastern Australia (extreme south-east Queensland to Tasmania, western Victoria and south-east South Australia) and south-west Western Australia. In NSW it occupies open forests and woodlands from the coast to the inland slopes, breeding in drier eucalypt forests and temperate woodlands.	**Moderate** The species may visit the study area to forage and/or nest.

Species Name	EPBC Act Status	NC Act Status	Description (Distribution and Habitat)	Likelihood of Occurrence/Impact
Polytelis swainsonii Superb Parrot	V	V	Found mainly in open, tall riparian River Red Gum forest or woodland. Often found in farmland including grazing land with patches of remnant vegetation. Breeds in hollow branches of tall eucalypt trees within 9 km of feeding areas.	Low The species may periodically visit the study area to forage, however it is not known to nest in the locality.
Rostratula australis Australian Painted Snipe	E	-	Usually found in shallow inland wetlands including farm dams, lakes, rice crops, swamps and waterlogged grassland. The species prefers freshwater wetlands, ephemeral or permanent, although it has been recorded in brackish waters.	Negligible The study area does not provide potential habitat for the species and it is only rarely recorded at a few locations in the ACT region (i.e. Jerrabomberra Wetlands, upper Yerrabi Ponds etc.).
Amphibians				
Litoria aurea Green and Golden Bell Frog	V	-	The species is found in marshes, dams and stream sides, particularly those containing bullrushes or spikerushes. Preferred habitat contains water bodies that are unshaded, are free of predatory fish, have a grassy area nearby and have diurnal sheltering sites nearby such as vegetation or rocks, although the species has also been recorded from highly disturbed areas including disused industrial sites, brick pits, landfill areas and cleared land.	Negligible The study area does not support potential habitat for this species.
Litoria castanea Yellow-spotted Tree Frog	E	-	The Yellow-spotted Tree Frog previously had a disjunct distribution, being recorded on the New England Tablelands and on the Southern Tablelands from Lake George to Bombala. The species has only recently (2010) been rediscovered on the Southern Tablelands. Prior to this the species had not been recorded on the Southern Tablelands since the 1970s. Found in large permanent ponds, lakes and dams with an abundance of bulrushes and other emergent vegetation, it shelters during autumn and winter under fallen timber, rocks, other debris or thick vegetation.	Negligible The study area does not support potential habitat for this species.

Species Name	EPBC Act Status	NC Act Status	Description (Distribution and Habitat)	Likelihood of Occurrence/Impact
Reptiles				
Aprasia parapulchella Pink-tailed Worm-lizard	V	V	The Pink-tailed Worm-lizard is a fossorial species which lives beneath surface rocks and occupies ant burrows. It feed on ants, particularly their eggs and larvae. Thought to lay eggs within the ant nests under rocks that it uses as a source of food and shelter and for thermoregulation. Key habitat features are a cover of native grasses, particularly Kangaroo Grass, sparse or no tree cover, little or no leaf litter, and scattered small rock with shallow embedment in the soil surface.	Low The grassland and derived grassland portions of the study area are highly modified, have been previously pasture improved, and are heavily grazed. This prolonged disturbance has removed the habitat features of value to the Pink-tailed Worm-lizard and the species is unlikely to occur in the study area. Notwithstanding this, areas of potential habitat (surface rock scatter with native grasses and minimal leaf litter) in the study area were surveyed for this species. No individuals were found, confirming that the study area does not contain potential habitat for the Pink-tailed Worm-lizard.
Delma impar Striped Legless Lizard	V	V	The Striped Legless Lizard is patchily distributed in grasslands of south-eastern NSW, the ACT, north-eastern, central and south-western Victoria, and south-eastern South Australia. In the ACT, the species is known to occur at four separate locations - in grassland areas of Gungahlin, Majura and Jerrabomberra Valleys, and Yarramundi. Unsuitable habitat, roads and urban development separate these sites. Most areas where the species persists are thought to have had low to moderate levels of agricultural disturbance in the past and it has been suggested that ploughing in particular may be incompatible with the survival of the species. Until recently, the species was thought to inhabit only native grasslands dominated by species such as Tall	Low The grassland and derived grassland portions of the study area are highly modified, have been previously pasture improved, and are heavily grazed. This prolonged disturbance has removed the habitat features of value to the

Species Name	EPBC Act Status	NC Act Status	Description (Distribution and Habitat)	Likelihood of Occurrence/Impact
			Speargrass and Kangaroo Grass. In recent years, surveys have revealed the Striped Legless Lizard in many sites dominated by exotic species such as Phalaris, Serrated Tussock and Flatweed (Biosis Research 2012). They have also been found in several secondary grassland sites, generally within two kilometres of primary grassland.	Striped Legless Lizard and the species is unlikely to occur in the study area.
Tympanocryptis pinguicolla Grassland Earless Dragon	E	E	In the Canberra-Monaro region the Grassland Earless Dragon is restricted to Natural Temperate Grassland that is dominated by perennial tussock-forming species. It is known to make use of grass tussocks as well as small holes in the ground that are also used by invertebrates such as wolf spiders and crickets. The species is known to occur in suitable native grassland habitat in the Majura and Jerrabomberra valleys in the ACT and at 'Letchworth' near Queanbeyan in NSW.	Negligible The site does not support potential habitat for this species.
Fish and Crustacea				
Maccullochella peelii Murray Cod	V	-	The Murray Cod's natural distribution extends throughout the Murray-Darling basin ranging west of the divide from south east Queensland, through NSW into Victoria and South Australia. The species is found in the waterways of the Murray– Darling Basin in a wide range of warm water habitats that range from clear, rocky streams to slow flowing turbid rivers, billabongs and large deep holes. Murray Cod is entirely a freshwater species and will not tolerate high salinity levels.	Negligible There is no potential habitat within the study area for this species.
Macquaria australasica Macquarie Perch	E	E	Macquarie Perch are found in the Murray-Darling Basin (particularly upstream reaches) of the Lachlan, Murrumbidgee and Murray rivers, and parts of south-eastern coastal NSW, including the Hawkesbury and Shoalhaven catchments. Macquarie perch are found in both river and lake habitats, especially the upper reaches of rivers and their substantial tributaries.	Negligible There is no potential habitat within the study area for this species.
Insects				
Perunga ochracea Perunga Grasshopper	-	V	The Perunga Grasshopper is usually recorded opportunistically by ecologists undertaking vegetation surveys or targeted surveys for other species. The species is generally a natural grassland specialist, and although some records	Low The grassland and derived grassland portions of the study area are highly modified, have

Species Name	EPBC Act Status	NC Act Status	Description (Distribution and Habitat)	Likelihood of Occurrence/Impact
			occur in Box-Gum Woodland, such sites are usually nearby the historical ecotone between the two ecological communities.	been previously pasture improved, and are heavily grazed. This prolonged disturbance has removed the habitat features of value to the Perunga Grasshopper and the species is unlikely to occur in the study area.
Synemon plana Golden Sun Moth	CE	E	The Golden Sun Moth's NSW populations are found in the area between Queanbeyan, Gunning, Young and Tumut and the species has been recorded at many sites in the lowland areas of the ACT. The species occurs in Natural Temperate Grasslands and Box-Gum Grassy Woodland in which the groundcover is dominated by Wallaby Grasses (*Rytidosperma* spp.). It is believed that the females lay up to 200 eggs at the base of the Wallaby Grass tussocks. After hatching, the larvae tunnel underground where they remain feeding on the roots of Wallaby Grass tussocks. The species is also known to feed on the introduced species (and Weed of National Significance), Chilean Needle Grass *Nassella neesiana*.	Low The grassland and derived grassland portions of the study area are highly modified, have been previously pasture improved, and are heavily grazed. This prolonged disturbance has removed the habitat features of value to the Golden Sun Moth and the species is unlikely to occur in the study area.

Appendix B. Vegetation Survey Results Tables

Table B1. Vegetation Plot/Transect Data

Parameter	Plot/transect									
	01.1.1	16.1.1	16.1.2	16.2.1	16.2.2	16.2.3	16.3.1	16.3.2	16.4.1	16.4.2
Native plant species richness in 20x20 m plot	0	4	9	1	0	4	5	4	3	2
Number of large trees in 20x50 m plot	0	3	4	2	3	6	0	0	0	0
Overstorey regeneration in whole zone	-	*E. melliodora* *E. blakelyi*	*E. melliodora* *E. blakelyi*	-	-	-	-	-	-	-
Total length of fallen logs in 20x50 m plot	0 m	0 m	6 m	4 m	4 m	7 m	0 m	0 m	0 m	0 m
Native overstorey (%) cover in 50 m transect	0	13	5	13	15	10	0	0	0	0
Native mid-storey (%) cover in 50 m transect	0	0.5	2.0	0	0	0	0	0	0	0
Native groundcover (grasses) in 50 m transect	0%	88%	67%	10%	9%	12%	72%	63%	3%	0%
Native groundcover (shrubs) in 50 m transect	0	0	0	0	0	0	0	0	0	0
Native groundcover (other) in 50 m transect	0	0	0	0	0	0	0	0	0	0
Exotic plant cover in 50 m transect	100%	12%	33%	90%	91%	88%	28%	37%	97%	100%

Table B2. Plant species recorded within Plot/Transects

Species Name	Common Name	Plot/transect									
		01.1.1	16.1.1	16.1.2	16.2.1	16.2.2	16.2.3	16.3.1	16.3.2	16.4.1	16.4.2
Exotic											
Arctotheca calendula	Capeweed						X				
Bromus sp.	Brome				X	X	X				
Dactylis glomerata	Cock's Foot Grass	X	X	X		X	X	X	X	X	X
Echium plantagineum	Paterson's Curse	X	X		X			X	X	X	
Elucine tristachya	Goose Grass	X				X			X		
Eragrostic curvula	African Lovegrass							X	X		
Erodium sp.	Stork's Bill				X		X				
Hirschfeldia incana	Hoary Mustard		X	X		X					
Hordeum sp.	Barley Grass					X	X				
Hypochaeris radicata	Cat's Ear	X	X	X	X	X		X	X	X	
Malva sp.	Mallow Weed				X	X	X				
Modiola caroliniana	Carolina Mallow				X						
Phalaris aquatica	Phalaris		X	X	X	X	X	X	X	X	X
Plantago lanceolata	Ribwort Plantain	X		X							
Pyracantha anguistifolia	Orange Firethorn			X							
Rosa rubiginosa	Sweet Briar			X					X		
Trifolium sp.	Clover	X			X	X	X	X	X	X	X
Native											
Austrostipa bigeniculata	Tall Speargrass		X	X			X	X	X		X
Austrostipa scabra	Corkscrew Grass		X	X			X	X	X	X	
Bothriochloa macra	Red-leg Grass		X	X	X		X	X	X	X	X
Chrysocephalum apiculatum	Common Everlasting			X							

Species Name	Common Name	Plot/transect									
		01.1.1	16.1.1	16.1.2	16.2.1	16.2.2	16.2.3	16.3.1	16.3.2	16.4.1	16.4.2
Eucalyptus blakelyi	Red Gum		X	X	X	X	X				
Eucalyptus melliodora	Yellow Box		X	X	X	X	X				
Geranium solanderi	Native Geranim			X							
Juncus filicaulis	Pinrush			X							
Lomandra filiformis coriacea	Wattle Matrush			X				X	X		
Microlaena stipoides	Weeping Grass			X							
Oxlis perennans	Oxalis							X			
Rhytidosperma sp.	Wallaby Grass		X	X			X	X	X	X	

2 April 2019

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Ecological Impact Assessment for the proposed subdivision of Block 5, Section 103, Symonston – Addendum regarding the significance of impacts under the 'worst case scenario'

Capital Ecology project no. 2873

Dear Mr Purdon,

We provide this letter of advice as an addendum to the Ecological Impact Assessment (EIA) Capital Ecology prepared for the proposed subdivision of Block 5, Section 103, Symonston, ACT (the 'study area') (Capital Ecology 2018[1]). We understand that, whilst the ACT Government concurs with our assessment of the ecological values of the study area and our assessment of the significance of the impacts of the proposed development, there is concern regarding the potential for the proposed development to facilitate future impacts that may cumulatively constitute significant impacts. In light of this, we understand that the ACT Government have requested that this addendum be prepared to assess the significance of the impacts which would occur under the hypothetical 'worst case scenario', this being outlined by Purdon Planning (2019[2]) as –

> *"the removal of all native vegetation, including native grasses and trees, from the site, resulting in a complete loss of ecological values."*

Accordingly, we provide below a brief summary of the EIA findings, followed by an assessment of the significance of the 'worst case scenario' and outline of the legislative assessment and approvals processes which would likely apply.

[1] Capital Ecology (2018). *Ecological Impact Assessment for the proposed subdivision of Block 5, Section 103, Symonston*. 29 March 2018. Capital Ecology project no. 2827.
[2] Purdon Planning (2019). *Agricultural Subdivision, Block 5 Section 103, Symonston, ACT. Application for EIS Exemption under Section 211 of the Planning and Development Act 2007*. March 2019.

Ecological Impact Assessment – summary of findings

As detailed in the EIA, the significant ecological values of the study area are summarised as follows.

- 2.08 ha of remnant woodland consistent with the criteria for the Box-Gum Woodland threatened ecological community (TEC) listed as critically endangered pursuant to the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and endangered pursuant to the ACT *Nature Conservation Act 2014* (NC Act).
- 21.48 ha of native vegetation as defined pursuant to the NC Act. This area comprises the vegetation zones within the study area where:
    - *trees or shrubs indigenous to the area have a canopy cover of 10% or greater in any stratum; and/or*
    - *native plants indigenous to the area comprise 50% or more of the cover of the groundstorey (grasses, small shrubs, forbs, sedges etc.).*
- 268 mature remnant eucalypt trees (199 Blakely's Red Gum and 69 Yellow Box). As demonstrated by Banks (1997[3]), most of these trees are over 100 years old, some are over 200 years old, and several are likely to be over 300 years old. Most of the remnant trees contain numerous hollows which would provide nesting/roosting habitat to a variety of native birds, insectivorous bats, and arboreal mammals. The study area's remnant trees are also considered likely to be of value as foraging habitat, and potentially breeding habitat, for several EPBC Act and/or NC Act listed birds, and numerous other species considered conservation dependant in the region.

As concluded in the EIA and illustrated in Figure 5, the proposed subdivision has been designed in a manner that avoids native vegetation clearance and associated biodiversity impacts. Specifically, the proposed subdivision:

- will not impact any EPBC Act / NC Act listed threatened ecological community;
- will avoid clearance of, or other direct impacts to, all of the 268 remnant eucalypts;
- will avoid clearance of NC Act native vegetation;
- is unlikely to impact any EPBC Act and/or NC Act listed threatened flora species (or species considered 'rare and uncommon' in the ACT); and
- is unlikely to significantly impact any EPBC Act and/or NC Act listed threatened or migratory fauna species (or species considered conservation dependant in the region).

In light of the above, the key conclusions of the EIA were that:

- EPBC Act referral is unwarranted for the proposed development and is not recommended; and
- the requirement to prepare an Environmental Impact Statement (EIS) is not triggered for the proposed development.

[3] Banks J.C.G (1997). *Tree ages and ageing in yellow box. In: Dargavel J, editor. The coming of age - Forest age and heritage values*. Canberra, Australia: Environment Australia. Pgs 17-28.

Assessment of 'worst case scenario'

Impacts

The hypothetical 'worst case scenario' as defined above would result in the permanent clearance/loss of the following.

1. 2.08 ha of woodland which is consistent with the definition of the ecological community:
    - White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland, classified as critically endangered pursuant to the EPBC Act; and
    - White Box – Yellow Box – Blakely's Red Gum Woodland, classified as endangered pursuant to the NC Act.
2. 21.48 ha of native vegetation as defined pursuant to the NC Act.
3. 268 mature remnant eucalypt trees (199 Blakely's Red Gum and 69 Yellow Box).

In addition to these direct and quantifiable impacts, this 'worst case scenario' would also adversely impact the ecological values of the study area and locality in the following ways.

- Loss of a component of the Box-Gum Woodland TEC, an ecological community which is listed as critically endangered owing to the fact that clearance for agriculture, urban development and other purposes has resulted in extensive loss of the community such that less than 5% remains in a condition consistent with the listed TEC, and less than 0.5% remains in near intact condition (TSSC 2006[4]). In this regard, whilst 2.08 ha is a relatively small proportion of the TEC present in the broader locality (i.e. Callum Brae NR, Mount Mugga Mugga NR, etc.), any remnant of this critically endangered ecological community is significant to its conservation. In addition to the area of TEC loss itself, the loss of a component of a patch, albeit a relatively small component, has the potential to adversely impact the larger patch via altering the edge-to-core ratio and other less obvious yet important elements of the patch's ecological functioning.
- The extent of the listed Box-Gum Woodland TEC is that identified in the EIA, and accordingly this is the portion of the study area that is of primary consideration under the provisions of the EPBC Act and NC Act. Notwithstanding this, whilst not comprising part of the listed TEC themselves due to their occurring over exotic pasture, the 190 remnant woodland trees occurring in the other vegetation zones in the study area are likely to be of importance to the ecological function and persistence of the patches of the TEC. The loss of the remnant trees on adjacent land may alter and affect the intensity and impact of numerous ecosystem factors, including eucalypt pollination success, woodland bird inhabitation, lerp infestation, and numerous degrading edge effects. In this regard, the impact of the broad clearance of remnant trees in the study area would potentially impact the TEC in the study area and nearby, even if the TEC itself is not cleared.
- Loss of a component of a habitat resource which is critical to supporting the persistence in the locality of a variety of native birds, insectivorous bats, and arboreal mammals. In addition to

[4] Threatened Species Scientific Committee (2006). *Commonwealth Listing Advice on White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland*. Available from: http://www.environment.gov.au/biodiversity/threatened/communities/box-gum.html.

supporting numerous common fauna species, the study area's remnant trees are also considered likely to be of value as foraging habitat, and potentially breeding habitat, for several EPBC Act and/or NC Act listed birds, and numerous other species considered conservation dependant in the region. Whilst 268 trees are a relatively small proportion of those present in the broader locality, such trees are a disproportionately valuable feature of the landscape as:

- they provide a habitat function (notably hollows for nesting) which cannot be effectively replicated by any other habitat feature (i.e. many woodland fauna species will only nest in hollows in old woodland trees);
- they provide canopy connectivity between larger patches of more intact woodland in the locality, a function not effectively facilitated by younger vegetation as some fauna species avoid vegetation devoid of mature canopy trees; and
- owing to the very long time to maturity and hollow development etc., they are cannot be replaced in a timeframe that can be reasonably catered for by planning decisions and associated mitigation and/or offset actions.

The above outlined importance of retaining mature woodland trees has been demonstrated by numerous recent studies (Gibbons *et al*. 2015[5]; Le Roux *et al*. 2014a[6]; Le Roux *et al*. 2014b[7]; Stagoll *et al*. 2012[8]) and is the key driver behind the recent listing of '*The loss of mature native trees (including hollow-bearing trees) and a lack of recruitment*' as a key threatening process under the NC Act (ACT Government 2018[9]). It is our understanding that the ACT Government is currently developing an action plan for this key threatening process, the content of which will guide the ACT Government's future assessment and approval processes relating to Development Applications (DAs) for development which will impact mature native trees.

Legislative assessment and approvals processes

Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*

The Commonwealth EPBC Act requires that proposed 'actions' be assessed in terms of their potential to impact upon 'Matters of National Environmental Significance' (MNES) as defined under the Act.

Where a potential impact on a MNES may occur as a result of a proposed action, the significance of that impact must be assessed. Guideline criteria for determining whether an impact is significant are provided under the Act. Where a proposed action will, or is likely to, have a significant impact on a MNES, the proposed action must be referred to the Commonwealth Minister for the Environment and

[5] Gibbons P., Ikin K., Le Roux D. and MacKenzie A (2015). *The case for retaining more mature trees within urban developments in Canberra*. Unpublished report for the Australian National University, Fenner School of Environment & Society.
[6] Le Roux DS., Ikin K., Lindenmayer DB., Manning AD. and Gibbons P (2014a). *The future of large old trees in urban landscapes.* PLOS One 9(6): e99403.
[7] Le Roux DS., Ikin K., Lindenmayer DB., Blanchard W., Manning AD. And Gibbons P (2014b). *Reduced availability of habitat structures in urban landscapes: Implications for policy and practice.* Landscape and Urban Planning 125: 57-64.
[8] Stagoll K., Lindermayer DB., Knight E., Fisher J. and Manning AD (2012). *Large trees are keystone structures in urban parks.* Conservation Letters 5(2): 115-122.
[9] ACT Government 2018. *Nature Conservation Key Threatening Processes List 2018 (No 1). Notifiable instrument NI2018–538. The loss of mature native trees (including hollow-bearing trees) and a lack of recruitment*. 20 September 2018.

Energy. The purpose of the referral is to determine whether a proposed action requires approval and/or controls under the EPBC Act. If impacts to MNES cannot be avoided or substantially minimised/ mitigated, the Minister is likely to declare the action a 'controlled action'. In such a case a formal offset may be appropriate to offset the residual significant impact/s, the specifics of which would be determined in accordance with the EPBC Act Environmental Offsets Policy (Commonwealth of Australia 2012[10]).

With regard to the above, as detailed in the EPBC Act Significant Impact Guidelines (Commonwealth of Australia 2013[11]), whilst there are several criteria against which to assess the likelihood that a proposed action will significantly impact an EPBC Act listed ecological community, we note that the first states that –

> *An action is likely to have a significant impact on a critically endangered or endangered ecological community if there is a real chance or possibility that it will reduce the extent of an ecological community*.

Regarding the above, the clearance of 2.08 ha of EPBC Act Box-Gum Woodland (i.e. PCT-ACT16 Zone 1) would clearly reduce the extent of the ecological community. Accordingly, the 'worst case scenario' would likely have a significant impact on this critically endangered ecological community. Indeed, when considered with regard to the significant impact guidelines, the clearance of the entire area of EPBC Act Box-Gum Woodland would certainly have a significant impact.

In addition to the above, the clearance of all vegetation in the study area may also significantly impact numerous EPBC Act listed woodland birds, either directly through habitat loss or more indirectly.

Given the significance of the impact on EPBC Act Box-Gum Woodland, it is almost certain that the Minister would declare the 'worst case scenario' a 'controlled action'. Whilst certain significant impacts can be addressed via the provision of an offset, it is unlikely that the Minister would approve an offset as a means of addressing this impact. Indeed, as no credible argument could be made to demonstrate the necessity of the Box-Gum Woodland clearance, it is likely that the Minister would declare the proposed action 'clearly unacceptable'.

ACT *Planning and Development Act 2007*

Pursuant to the ACT P&D Act, a development proposal will be assessed via the 'impact track' and require the preparation of an EIS if the development will have any of the impacts listed under Parts 4.2 and 4.3 of Schedule 4 of the Act.

The ecological impacts that trigger the requirement to prepare an EIS are detailed in the EIA.

With regard to Item 1 of Part 4.3:

- the clearance of 2.08 ha of NC Act Box-Gum Woodland is likely to have a significant adverse environmental impact on a threatened ecological community; and

[10] Commonwealth of Australia (2012). *EPBC Act Environmental Offsets Policy*. Australian Government Department of Sustainability, Environment, Water, Population and Communities.
[11] Commonwealth of Australia (2013). *Matters of National Environmental Significance - Significant Impact Guidelines 1.1. Environment Protection and Biodiversity Conservation Act 1999*. Commonwealth Department of the Environment.

- the clearance of NC Act Box-Gum Woodland and/or the removal of 268 remnant eucalypt trees is likely to have a significant adverse environmental impact on one or more woodland bird species listed under one of the categories *(a)* to *(j)*.

With regard to Item 2 of Part 4.3, at 21.48 ha, the 'worst case scenario' would clearly involve *the clearing of more than 0.5ha of native vegetation in a native vegetation area, other than on land that is designated as a future urban area under the territory plan.*

In accordance with the above, the 'worst case scenario' would clearly have a 'significant adverse environmental impact' upon NC Act listed protected values. Assessment would occur via the 'impact track' and the preparation of an EIS would be required.

Conclusion

As demonstrated via the above assessment, the hypothetical 'worst case scenario' would clearly result in a significant impact on the EPBC Act listed Box-Gum Woodland TEC. The 'worst case scenario' may also significantly impact several EPBC Act listed woodland bird species. It is unlikely that such an impact would be approved under the provisions of the EPBC Act. Equally, the 'worst case scenario' would clearly result in a significant adverse environmental impact on the NC Act listed Box-Gum Woodland TEC and potentially several woodland bird species listed under one of the categories *(a)* to *(j)*. Such an impact would require assessment via the 'impact track' and require the preparation of an EIS. As with the Commonwealth assessment process, it is unlikely that the 'worst case scenario' would be approved by the ACT Government.

As noted above, the 'worst case scenario' is a hypothetical scenario which would not be permitted to take place by approval of the currently proposed subdivision. Indeed, as detailed in the EIA and summarised above, the proposed subdivision has been designed in a manner that avoids native vegetation clearance and associated biodiversity impacts.

As detailed in the EIA, in addition to the patch of EPBC Act / NC Act Box-Gum Woodland, the study area's 268 remnant woodland trees are the key remaining feature of biodiversity/ecological conservation value. The proposed subdivision would avoid impacts to the Box-Gum Woodland patch and would not result in the removal or other direct impacts to any of the remnant trees. This is reflected in the conclusion of the EIA that the proposed subdivision would not result in significant adverse environmental impacts.

Notwithstanding the above, it is understood that the ACT Government is concerned that the proposed subdivision may indirectly permit the clearance of relatively small areas of native vegetation clearance on each new lot, and that cumulatively the total area of clearance may be significant. Whilst we agree that the potential significance of native vegetation clearance should be considered cumulatively, we believe that it is important that this occurs in a manner that reflects the land use history of the study area and the key remaining features of biodiversity/ecological conservation value.

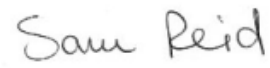
Regarding the above, it is our understanding that the current Crown Lease and Land Management Agreement (LMA) each stipulate that any native tree removal requires approval by the ACT Government. We also understand that these provisions will carry over to the Crown Lease and LMA for each new block. In addition to these controls, the Action Plan (ACT Government in prep.) addressing the recent NC Act listing of the key threatening process *'The loss of mature native trees (including hollow-*

bearing trees) and a lack of recruitment' will guide the ACT Government's future assessment and approval processes relating to DAs for development which will impact mature native trees.

In light of the above facts and circumstances, it is our view that the proposed subdivision will not indirectly permit future significant adverse environmental impacts (cumulatively or otherwise) to the key remaining features of biodiversity/ecological conservation value in the study area (i.e. Box-Gum Woodland and remnant trees) to legally occur without formal assessment and approval by the ACT Government and/or Commonwealth Government.

We trust that this letter of advice provides the assessment and advice required. If, however, you should have any questions relating to any of the matters discussed herein, please do not hesitate to contact us.

Yours sincerely,



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PastTraces Heritage Consultants

Block 5 Section 103 Symonston - Aboriginal and Historical Cultural Heritage Assessment.

Redacted Report Prepared for Purdon Planning

7th December 2018

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Document Control

Revision	Date	Author	Reviewed
D1	**3/12/2018**	**Lyn O'Brien**	**Rob Purdon**
F1	**07/12/2018**	**Lyn O'Brien**	

Disclaimer

Past Traces Pty Ltd has undertaken this assessment in accordance with the relevant Federal, State and Local Government legislation. Past Traces accepts no liability for any damages or loss incurred as a result of use for any purpose other than that for which it was commissioned.

Restricted Information

Under Part 9 of the Heritage Act 2004 information contained within this report is restricted and should not be made publically available. The information that is restricted includes (but is not limited to):

- Maps, Mapping Grid Reference Co-ordinates or images for Aboriginal heritage sites, places and objects.
- Location or detailed information regarding places of Aboriginal cultural significance, as expressed or directed by Representative Aboriginal Organisations, Aboriginal elders, or members of the wider Aboriginal community.
- Other culturally appropriate restricted information as advised by Aboriginal representatives and traditional knowledge holders.

Information in the report covered by the above categories should be redacted before being made available to the general public. This information should only be made available to those persons with a just and reasonable need for access.

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ACKNOWLEDGEMENTS

Past Traces acknowledges the assistance of the following people and organisations in the preparation of this report:

- Reuben House - Mirrabee
- Justin Bell – Buru Ngunawal Aboriginal Corporation
- James Mundy – Ngarigu Currawong Clan
- Carl Brown – King Brown Tribal Group

ABBREVIATIONS

CHA – Cultural Heritage Assessment

CMT – Culturally Modified Tree

FTF - Federal Territory Feature Map

OEH - NSW Office of Environment and Heritage

RAO – Representative Aboriginal Organisation registered under *Heritage Act 2004*

PAD – Potential Archaeological Deposit

SHE – Statement of Heritage Effects

UFP – Unexpected Find Protocol

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EXECUTIVE SUMMARY

Past Traces Pty Ltd has been engaged by Purdon Planning to prepare a Cultural Heritage Assessment (CHA) to identify constraints and provide planning information for the proposed subdivision of Block 5 Section 103 Symonston ACT. The block is currently under pastoral agistment and covers an area of approximately 37 hectares. Block 5 is shown in a regional context in Figure 1 and detail in Figure 2.

This assessment reviewed previous work in the area to gain background information, inform predictive modelling and completed a field survey across Block 5 to determine if any heritage constraints applied to Block 5 or if the potential to impact on any heritage sites is present.

Archaeological site patterning in the region shows a landscape dominated by low density artefact scatters focused on the areas of the Jerrabomberra Creek to the south east. No previously identified Aboriginal or historical heritage sites are located within Block 5. Heritage listed properties of Mugga Mugga Cottage and Callum Brae homestead are located on adjoining properties.

The project is currently at a concept plan level, but any construction project has the potential to impact on unidentified Aboriginal and historic heritage sites (places and/or objects), which are protected under the ACT *Heritage Act 2004.* The purpose of the heritage assessment is therefore to investigate the presence of any heritage sites and to assess the impacts and management strategies that may mitigate any potential impact.

Consultation with the Aboriginal Representative Aboriginal Organisations (RAOs) has been undertaken in accordance with ACT Heritage guidelines and the *Heritage Act 2004*. The RAOs participated in the field survey and provided guidance in regards to significance and appropriate management strategies.

A field survey was undertaken on the 26th November 2018 to confirm the findings of the desktop assessment. The field survey located one Aboriginal heritage site (Sym1) and one potential culturally modified tree (CMT – Sym2) which requires further assessment to determine the origin of the scar. A small area of potential archaeological deposit (PAD – Sym3) was identified on a small knoll overlooking a 1st order tributary creek line to Jerrabomberra Creek.

High ground surface visibility (GSV) was present throughout Block 5 as a result of short, cropped grass coverage and frequent rates of exposure throughout the paddocks.

As a result of the assessment completed for the project the following findings and recommendations apply:

Findings

- Three Aboriginal heritage sites (Sym1 , Sym2 and Sym3) are located in Block 5. These sites will require further assessment if impacts cannot be avoided through design.
- As a result of the assessment against the criteria and the Heritage Assessment Policy (ACT Heritage Council 2018) Sym 1, Sym 2 and Sym 3 do not meet any of the criteria for listing to the ACT Heritage Register although the sites remains protected under the *Heritage Act 2004* and can only be impacted with approval granted by the ACT Heritage Council.
- Adjacent to Block 5 are the historical properties of Callum Brae and Mugga Mugga. Block 5 may retain historical items within its boundaries but due to the intensive use of the area (as shown by aerial photographs which show ploughing through all paddocks at various periods) the potential is considered to be low. These past disturbances will also have impacted on the survival rates of Aboriginal sites, along with the removal of trees and native vegetation.

Recommendations

- One identified heritage site Sym1 (Aboriginal) is located within Block 5. Impacts should be avoided at this site. If impacts will occur then a Statement of Heritage Effects (SHE) will need to be approved by the ACT Heritage Council prior to works commencing.
- A potential CMT (Sym2) has been identified within Block 5. Assessment of this tree by a qualified arborist should be undertaken to determine if the origin of the scar is cultural or natural.
- An area of PAD (Sym3) has been identified within Block 5 overlooking a 1st order creek line. Subsurface testing of this area of PAD will be required if impacts are to occur at this location. A subsurface methodology will be developed and submitted to the ACT Heritage Council for endorsement prior to any works being undertaken. Results will be reported in a SHE for the project.
- If impacts can be avoided at the three Aboriginal heritage sites, they do not pose a heritage constraint on the project. If impacts will occur the above recommendations must be applied.
- There are no other heritage constraints on the project.
- All Aboriginal objects and places are protected under the ACT *Heritage Act 2004*. It is an offence to disturb an Aboriginal site without approvals granted by the ACT Heritage Council. Should any Aboriginal objects be encountered during works then works must cease immediately in the vicinity of the find, and the find should not be moved until assessed by a qualified archaeologist with the participation of the RAOs. Adherence to the Unexpected Discovery Plan (UDP) attached at Appendix 2 is required.
- This CHA should be submitted to ACT Heritage Council for endorsement prior to works commencing.

1 INTRODUCTION

1.1 PROJECT BACKGROUND

Past Traces Pty Ltd has been engaged by Purdon Planning to prepare a Cultural Heritage Assessment (CHA) to identify constraints and provide planning information for the proposed subdivision of Block 5 Section 103 Symonston ACT for future residential development. The block is currently under pastoral agistment and covers an area of approximately 37 hectares. Block 5 is shown in a regional context in Figure 1 and detail in Figure 2.

This CHA reviewed heritage registers, previous work in the area to gain background information, inform predictive modelling and completed a field survey across Block 5 to determine if any heritage constraints applied to Block 5 or if the potential to impact on any heritage sites is present.

Archaeological site patterning in the region shows a landscape dominated by low density artefact scatters focused on the areas of the Jerrabomberra Creek to the south east. No previously identified Aboriginal or historical heritage sites are located within Block 5. Early pioneer settlement heritage listed properties of Mugga Mugga Cottage and Callum Brae homestead are located on adjoining properties.

The area would hold the potential for unrecorded Aboriginal and Historical archaeological material to be present due to its use from the 1830's by European settlers and prior to this period by Aboriginal people.

1.2 PROPOSED WORKS AND IMPACTS

The proposal is for the agricultural subdivision of Block 5 to provide four additional residences. Impacts from subdivision would be mainly confined to areas of building envelopes and access roads. These impact areas would be highly disturbed with excavation and displacement of soils. Installation of infrastructure such as power, communications and water would also impact through Block 5. The immediate surrounds would also be impacted by machinery movement and the storage of materials. All of these construction activities will compact and impact on soils.

Lesser impacts would result from boundary fencing and landscaping of housing lots.

Due to the highly destructive nature of the works, the entire Block 5 was assessed to allow for works encroachment and to provide background information to inform planning and design of housing lots.

Any heritage sites in the vicinity of works would be impacted by the proposed construction. As the project is at a design phase, it is anticipated that if any sites are located within Block 5, the project will be re-designed to avoid impacts wherever possible.

1.3 ABORIGINAL CONSULTATION

Consultation with the four Representative Aboriginal Organisations (RAOs) has been undertaken in accordance with ACT Heritage guidelines and the *Heritage Act 2004*. All of the RAOs participated in the field survey of Block 5 and provided guidance in regards to significance and appropriate management strategies.

The RAOs consulted are:

- Mirrabee
- King Brown Tribal Group
- Buru Ngunawal Aboriginal Corporation
- Ngarigu Currawong Clan

In addition to the discussions held on site with the RAOs, a draft of this report was supplied for comments and follow up phone calls made to each of the RAOs to determine if they had any concerns with the management outcomes. The process of consultation to the development of this CHA is provided in Appendix 1.

1.4 REPORT AIMS AND FORMAT

The CHA is being undertaken to complete the following objectives:

1. Review of the ACT Heritage sites register to identify any recorded heritage sites within the project area.
2. Review of previous reports in area to develop predictive model of site location
3. Consult with Aboriginal RAOs
4. Assess landforms present in project area against predictive model to determine potential for heritage sties and determine level of disturbance
5. Complete field survey over the project area to visually inspect landforms and assess potential based on predictive model. The site visit will also document levels of disturbance within project area.
6. Record and assess sites identified during the survey as well as areas of Potential Archaeological Deposits (PADs)
7. Identify impacts to all identified Aboriginal and historic cultural heritage sites and places as a result of the proposed works
8. Complete CHA report with management recommendations to avoid or minimise impacts within the project area.

The CHA follows the following format as required under ACT Heritage guidelines:

1. Review of background information
2. Results of field survey and site visit
3. Management recommendations – provides mitigation strategies to avoid or minimise impact to unidentified heritage sites.
4. Record of Consultation
5. Unexpected Finds Protocol.

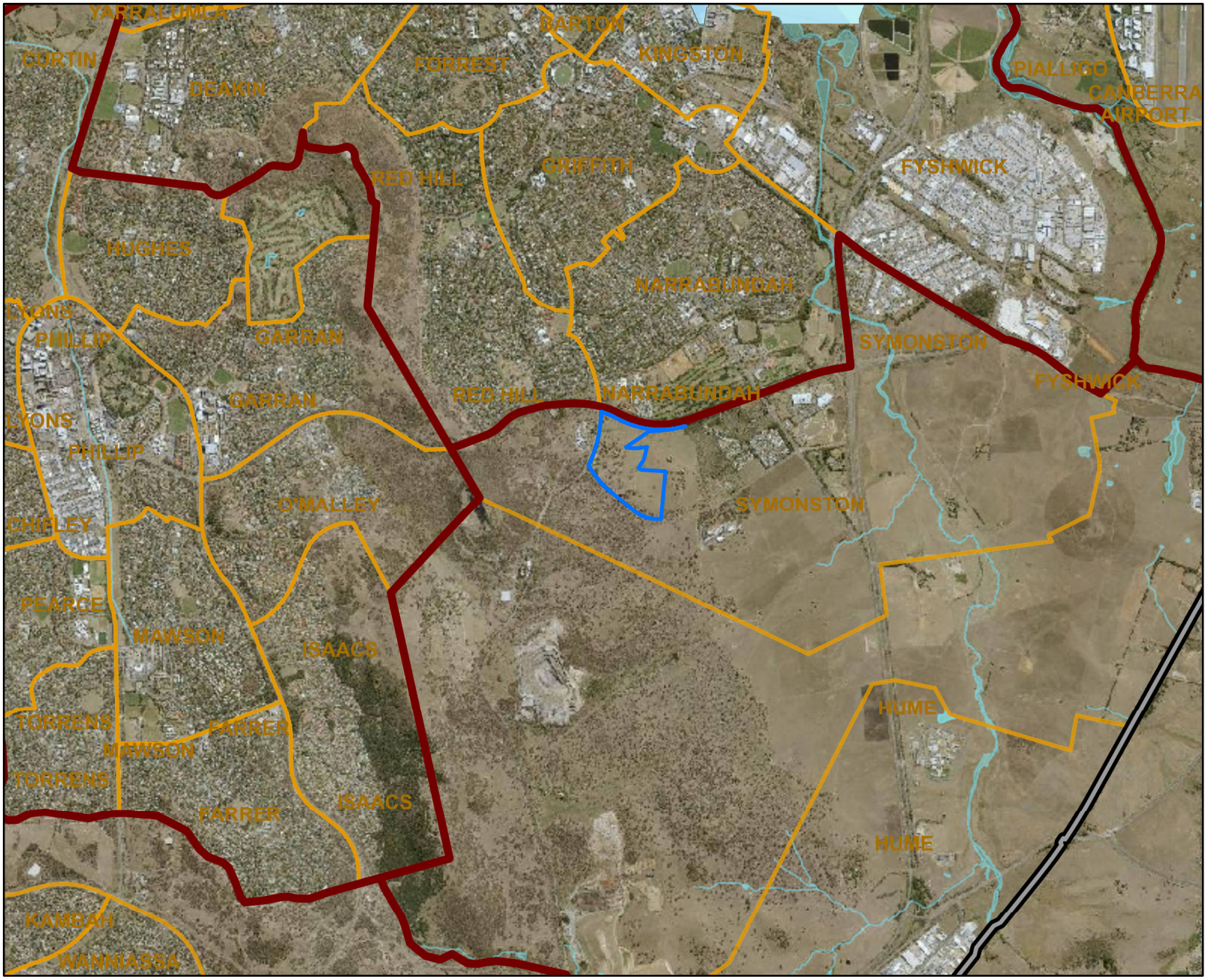

Figure 1: Regional Context

Legend

Study Area

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1:50,000

0 0.3 0.6 1.2 1.8 2.4

Kilometers
Coordinate System:
GDA 1994 MGA Zone 55

Imagery: © Nearmap

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Figure 2: Study Area

Legend

Study Area

N

1:10,000

0 0.05 0.1 0.2 0.3 0.4

Kilometers
Coordinate System:
GDA 1994 MGA Zone 55

Imagery: © Nearmap

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2 BACKGROUND INFORMATION

The following section briefly summarises the geology and landforms, flora and fauna of Block 5. The discussion focuses on those elements of the natural environment that may have influenced past human behaviour and archaeological site formation processes.

2.1 REVIEW OF LANDSCAPE CONTEXT

2.1.1 Geology and Topography

Block 5 is underlain by the Mt Painter Volcanics. These late Silurian volcanic systems consists mainly of rhyolitic and dacitic tuffs. Quartz will be present naturally within this formations along with shales. A common geological feature of the area is highly weathered bedrock. Thin shallow soils characterise the area, highly acidic and easily erodible. A duplex soil system overlaying clay bedrock appears in profile across the area. The geology of Block 5 is shown on Figure 3.

Two soil landscapes are present within Block 5. The majority of the area is composed of the Burra soil landscape with a section in the south east corner consisting of Williamsdale soil Landscape. The distribution of soil landscapes is shown on Figure 4. Descriptions of each of these soil landscapes are provided below.

The Burra soil landscape is described as being on 'undulating to rolling low hills and alluvial fans over the Silurian Volcanics '(Jenkins 2000:44). The Burra Group soils are moderately deep and well drained Kurosols and Chromosols. Shallow earthy sands (Lithosols) are present on upper slopes and crests. Red and Brown Kandosols and Kurosols occupy mid slopes and most lower slopes. Brown chromosols are present along minor drainage lines (Jenkins 2000:44).

The Williamsdale soil landscape consists of moderately deep Yellow Chromosols on Red and Brown Kandosols on upper rises and fan elements. Moderately deep, poorly drained sodosolic soils on the mid-slopes and lower slopes (Jenkins 2000:133). Soils are erodible and prone to waterlogging on lower areas.

The topography of the area consists of gently undulating hills and fans, interspersed with small drainage lines and minor tributary creek lines which drain to the south east to the Jerrabomberra Creek.

2.2 FLORA AND FAUNA

The natural vegetation across Block 5 has been cleared for pastoral grazing and now consists of open paddocks with pockets of remnant woodland tree species such as Yellow box or Blakely Red Gum. Prior to the clearance of the natural vegetation the area would have supported a mixed woodland on the ridge tops and rolling hills with natural temperate grasslands along the flatter slopes close to the creek lines. These communities supported a wide range of edible plant and fauna species. Fauna present would range from small marsupials (i.e. possums), to avian species and macropods. A range of lizards also inhabit this environment that would have been utilised by Aboriginal groups. The NSW OEH lists over 200 flora and fauna species as present within these woodlands, the majority of which had some utilisation in traditional Aboriginal lifeways.

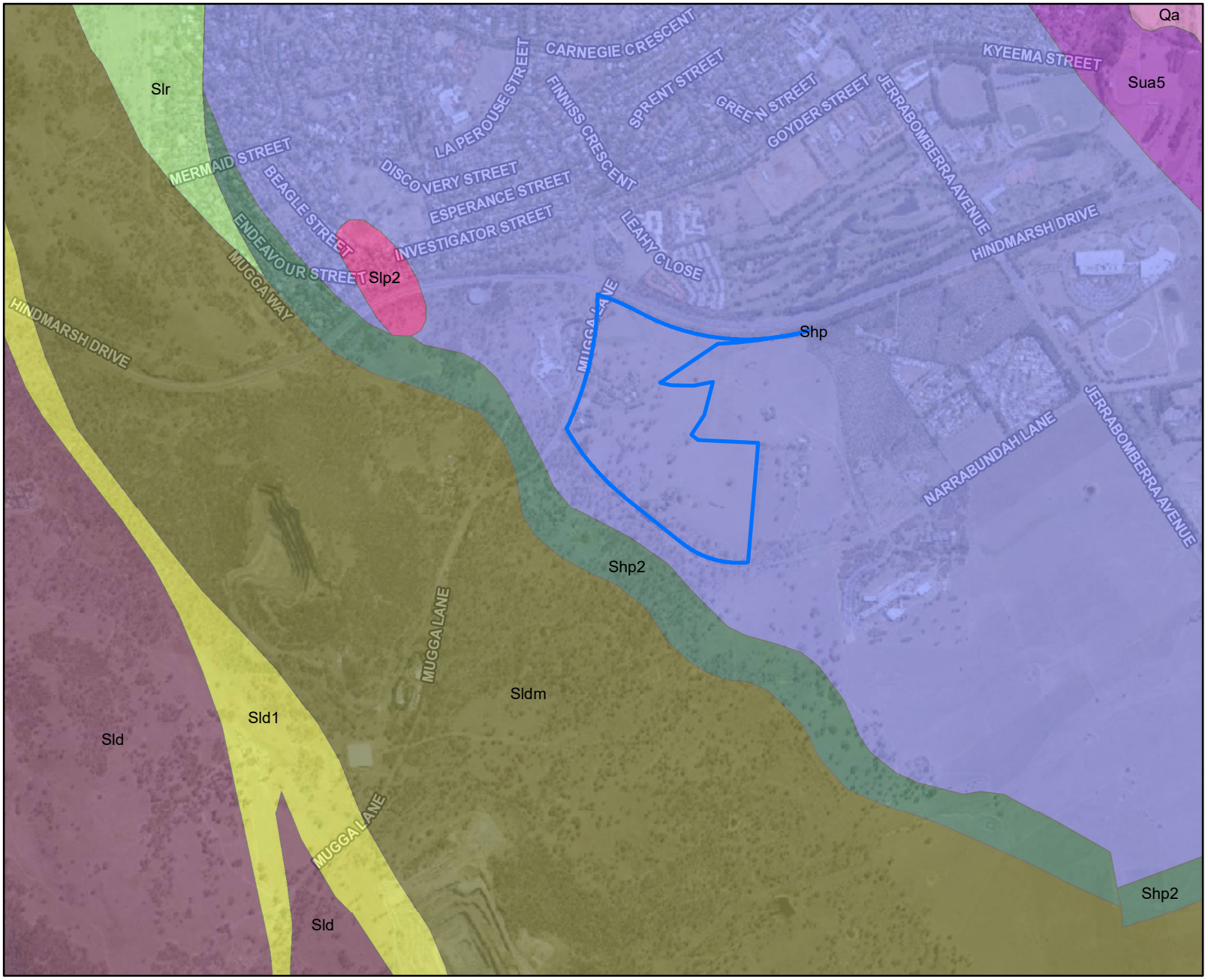

Figure 3: Geology

Legend

Study Area

Geology

- Canberra Formation - tuffaceous sandstone, tuff and ashstone
- Deakin Volcanics - rhyodacite lava
- Deakin Volcanics - rhyodacitic ignimbrite and minor volcaniclastic and argillaceous sediments
- Deakin Volcanics - tuff, tuffaceous sandstone, shale and ashstone
- Laidlaw Volcanics - coarse grey rhyodacite porphyry, massive and foliated (associated with Laidlaw Volcanic Suite)
- Mount Painter Volcanics - dacitic ignimbrite with lithic xenoliths and dacitic autoliths, minor tuff and ashstone
- Mount Painter Volcanics - tuff and ashstone
- Yarralumla Formation - calcareous and tuffaceous mudstone and siltstone with minor limestone, calc-silicate hornfels and quartz sandstone
- undifferentiated - alluvium, fluvial deposits: gravel, sand, silt and clay

N

1:20,000

0 125 250 500 750 1,000

Meters

Coordinate System:
GDA 1994 MGA Zone 55

Imagery: © Nearmap

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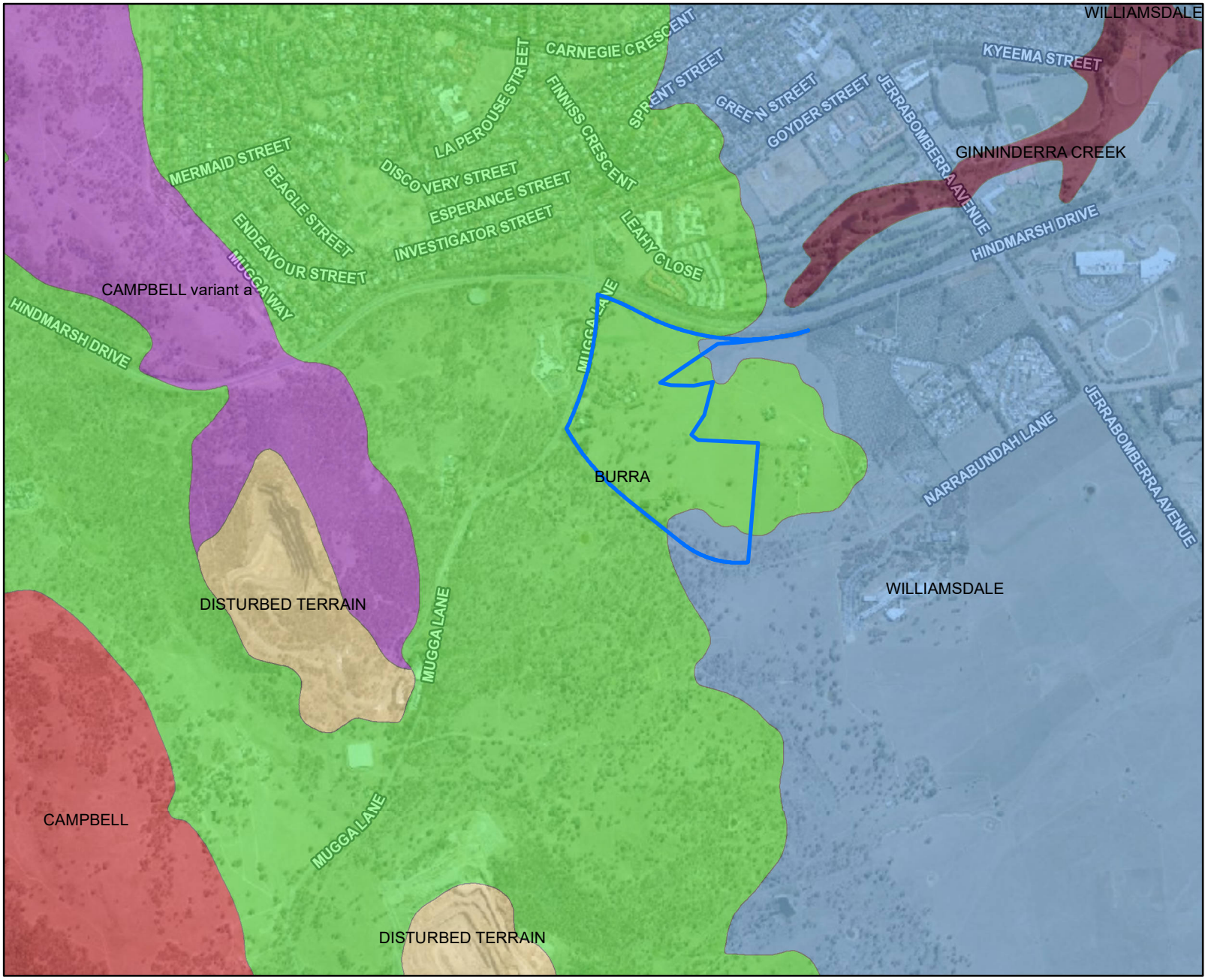
Figure 4: Soils



Legend

- Study Area

Soil Landscape

- BURRA
- CAMPBELL
- CAMPBELL variant a
- DISTURBED TERRAIN
- GINNINDERRA CREEK
- WILLIAMSDALE

N

1:20,000

0 125 250 500 750 1,000

Meters
Coordinate System:
GDA 1994 MGA Zone 55

Imagery: © Nearmap

PastTraces Heritage Consultants

The Jerrabomberra Creek to the south east of Block 5 would have focused activity including camping sites with a variety of resources, such as fish, yabbies, turtles and in the past platypus. Tributary creeks also focused mammal and birdlife providing hunting opportunities and access to water supplies. Creek lines also supplied fibrous material for weaving into twine for use in a range of activities as well as providing edible tubers and reeds (Percival and Stewart 1971).

2.3 HISTORIC LAND USE

Block 5 was historically part of the larger grazing properties in the region. Block 5 was originally settled in the 1830's as part of the Duntroon estate owned by the Campbell family. Duntroon was one of the earliest and largest pastoral properties in the region, with lands extending along both side of the Molonglo River. The property was part of the Mugga Mugga Outstation on which the Duntroon Estate head shepherd resided.

Review of the Queanbeyan Parish Map 2nd Edition 1904 shows the land as belonging to Robert Campbell of Duntroon. The 3rd Edition Parish Map (1911) notes the land as being acquired under Government Gazette from the Campbell's in 1912. Block 5 as shown on the detailed Federal Territory Feature Map of 1915 is listed as Mugga Mugga Paddock and described as good grazing. No buildings or areas of cultivation are present on this map. Block 5 overlain on the FTF map is shown in Figure 5.

The cottage of Mugga Mugga is located in the adjoining block 6 Section 103 Symonston and is listed to the ACT Heritage Register as an example of 19th Century rural workers home. The cottage was first built in 1838 (http://www.historicplaces.com.au/mugga-mugga-cottage/about). The Curley family resided at Mugga Mugga from 1913 when Duntroon was acquired for the Royal Military College until its acquisition by the ACT Government in 1995. The family ran sheep on the property, which was gradually reduced by further government acquisitions.

Follow their removal from the Curley estate, Block 5 does not appear to have been used for any purpose other than pastoral grazing. A fruit orchard has been established in the south east portion from a review of 1955 aerial photography, and the establishment of several large machinery sheds. These buildings and orchard have now been removed and the land returned to pastoral grazing.

This past land use has resulted in the following impacts which would have impacted on the preservation of archaeological material:

- Removal of native vegetation and tree cover
- Through ploughing of paddocks for pasture improvement or cropping, disturbance to soil surface and subsurface to an approximate depth of 70cm.
- Erosion on hill crests and upper slopes
- Soil deposition on lower slopes and creek flats
- Areas of stock impact along fencelines, gates and vehicle access roads
- Construction of four house lots with landscaped gardens, tanks and sheds.
- Installation of electricity transmission lines across the paddocks and communication lines.

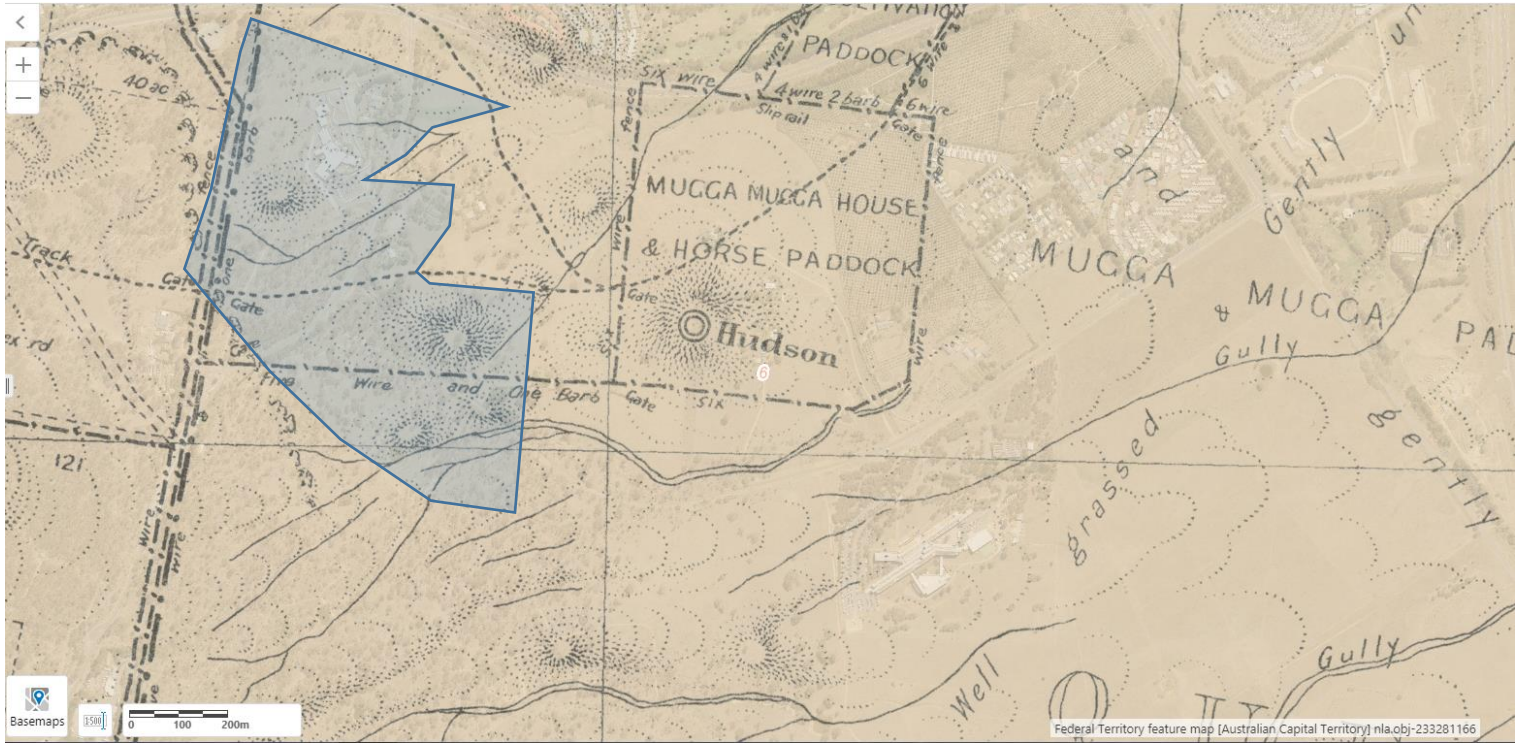


Figure 5: Federal Territory Feature Map showing project area

2.4 SEARCH OF ACT HERITAGE REGISTER

A search of the ACT Heritage Register was requested in November 2018. Online search of the heritage overlays and listings show two historic registered sites located adjacent to Block 5. These are:

- The Mugga Mugga Cottage
- The Callum Brae Homestead

The search revealed two Aboriginal heritage sites within 1km of Block 5. These sites consist of an artefact scatters located on a small ridge crest and an area of potential archaeological deposit (PAD).

The recorded sites within a 1km radius of Block 5 based on a search of the online heritage overlay on ACTMAPi are listed in Table 1 below, with their details of site type, recorder and landform location. The location of these sites (Aboriginal and Historical) in relation to Block 5 is shown on Figure 6.

Table 1. ACT Heritage Register Aboriginal Sites

SITENAME	REPORT_REFERENCE	SITE DESCRIPTION
ML1	NOHC 2003 – Symonston Assisted Living CHA	Artefact scatter of 10 artefacts located on small spur crest
Callum Brae PAD	AHS 1999 – Survey of Block 4 Symonston	Area of Potential

2.5 REVIEW OF ABORIGINAL ARCHAEOLOGICAL CONTEXT

2.5.1 Ethnohistoric Setting

Block 5 is within a region identified as part of the Ngunnawal language group. This is an assemblage of many small clans and bands speaking a number of similar dialects (Howitt 1996, Tindale 1974, Horton 1994). The southern section of Canberra represents the boundary between Ngunnawal and Ngarigo language groups. Currently descendants of both Aboriginal groups hold cultural affiliation with Block 5. The northern section of Canberra is considered to be Ngunnawal country with visitations from Wiradjuri people.

Aboriginal society consisted of small groups (based on family groupings) who moved, camped, gathered resources and hunted together. These activities have all left traces throughout the landscape characterised from isolated finds of stone artefacts to large distributions of artefacts which represent larger camping sites.

Prior to the European settlement, the ACT region held box gum woodland which contains hundreds of plants and animals utilised by Aboriginal people. Creeklines, such as Jerrabomberra Creek to the south of the project area would have been a focus for activities, with additional water resources, such as ducks, fish and yabbies.

This pattern of Aboriginal life was disrupted by the arrival of Europeans who displaced them from their traditional lands and prevented them accessing cultural sites and hunting grounds. Some of the local community found work on the larger pastoral stations in the region and continued aspects of traditional life.

Figure 6. ACT Heritage listing

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2.5.2 Previous archaeological studies.

Archaeological evidence has shown that Aboriginal people have occupied the Australian continent for at least 40,000 years and perhaps 60,000 years and beyond (Mulvaney and Kamminga 1999). Excavations at Birrigai Rock shelter show evidence of occupation of 32, 000 years (Flood et al 1987). A number of archaeological heritage assessment have been undertaken in the vicinity of Block 5. A brief overview of the most relevant studies are provided below. These studies have been small scale and development focused and no regional synthesis has been completed for the region.

Assessment in the wider area around Symonston have been reviewed to provide a wider database for predictive modelling and understanding of Aboriginal land use patterning. A list of the relevant studies for the Symonston region is provided in the following table with details of the most applicable assessments in the following sections.

Table 2. Heritage reports for the Symonston Region

Report Author	Title	Prepared for
Klaver 1997	Lake Jerrabomberra Aquatic Facility Archaeological Survey Preliminary Statement	RA Young and Assoc.
Archaeological Heritage Surveys 1999	Cultural Resource Survey of Block 4 Section 102 Symonston	Totalcare Projects
Southern Cross Heritage 2000	Cultural Resource Survey of Hume and Adjacent Areas	Dept of Urban Services
Navin Officer Heritage Consultants (NOHC) 2001	ACT Correctional Facility Block 10 Section 102 Symonston: Archaeological Subsurface testing program	Purdon Planning
NOHC 2003	Symonston Assisted Living Development Cultural Heritage Assessment	Purdon Planning
AASC 2003	Mugga Resource Recovery Estate Cultural Heritage Assessment salvage of site HA11 and test pitting results for PAD 1 and 2	Dept of Urban Services
Hughes et al 2003	Hume Recovery Estate ACT: Monitoring of ground disturbance at Sites HID1391 and HID1395	ACT Heritage Unit
NOHC 2004a	Emergency Services Bureau Headquarters and Joint Emergency Services Training Academy Hume: Cultural Heritage Survey	WP Brown and Partners
NOHC 2004b	ACT Prison Site Investigation Block 6 (part) & 12 Section 18 Hume Cultural Heritage Survey	Brown Consulting
Cultural Heritage Management Australia (CHMA) 2010	Hume West Industrial Estate: Site HW1/PAD 2 Conservation Management Plan	ACT Land Development Agency

Report Author	Title	Prepared for
CHMA 2012	Site Hume 5: Archaeological Investigations	ACT Heritage

Klaver (1997) completed a survey over 200ha for the Lake Jerrabomberra Aquatic Facility. This was approximately 4km from the current project area. The survey located three artefacts scatters, six isolated finds and one possible quarry. A model was applied focusing on water lines based on wider findings for the Canberra region.

AHS (1999) completed a survey of Block 4 Section 102 located to the south of Block 5. Two areas of PAD were identified. No heritage sites were identified by the survey and overall potential was considered to be low.

Barber (2000) completed a survey of the area at Hume. This study is approximately 6km to Block 5. The survey covered an area of 800ha and is the largest in the region. Eight artefact scatters, nine isolated finds, seventeen PADs and two scarred trees were recorded.

NOHC (2001) completed the assessment for the correctional facility at Symonston. This study area is approximately 3km to Block 5. No sites or areas of potential were identified.

NOHC (2003) undertook an assessment of Block 1 Section 3 Symonston, located directly adjacent to Block 5 on the southern boundary. The survey located a number of small artefact scatters on small knoll features and spur lines.

NOHC (2004a ad b) undertook studies along the eastern side of Monaro Hwy at Hume for the Emergency Services Headquarters and Alexander Maconochie Centre, sited side by side. They located only one area of PAD despite the area containing two first order streams and being close to Jerrabomberra Creek.

Additional studies have been undertaken at Hume and south Jerrabomberra which have resulted in the formulation of the following model (Barber 2014:14)

- open artefact scatters are the most common site type and most likely to be found in areas of level, well-drained elevated ground, such as spur and ridge crests, terraces, and elevated creek banks;
- the larger artefact scatters are most likely to be found within 100-150m of major drainage lines;
- where artefact scatters are found away from the major creek lines, they tend to be smaller and lower in density and situated on low gradient basal slopes or low gradient spur slopes;
- major ridgelines which could serve as natural access routes contain artefact scatters;
- suitable topographic features in lower valley contexts in proximity to the treeline may be preferred to otherwise suitable topographic locations in mid valley contexts, (NOHC 2001);
- sites are more often found in locations away from cold air drainage, within sheltered areas from the prevailing winds and with an easterly or north easterly aspect (Flood 1980);
- scarred trees may occur wherever old growth trees of sufficient age have survived, and
- stone procurement sites may occur where suitable rock outcrops on the surface.

2.5.3 Aboriginal land use/predictive model

The results of previous archaeological surveys in the region indicates that the potential for sites is present in a range of landforms. A pattern of site location that relates to the presence of potential resources for

Aboriginal use appears to be present, based on site locations recorded from the studies described in the previous section. The recorded sites, mainly consisting of small artefact scatters tend to be present due to the occurrence of small drainage or creek lines with their access to water resources, an essential factor for Aboriginal people. This model is based on stream order (Strahler 1952) and is considered applicable to a wider area of NSW (White and McDonald 2010) based on the similarity of Aboriginal landscape use and the need for base resources.

Based on the results of these previous archaeological investigations in the local area, it is possible to provide the following model of site location in relation to Block 5. This follows from the model developed by Barber (2014) for the wider area.

Stone artefact scatters – representing camp sites these sites can occur across the landscape, usually in association with some form of resource or landscape unit on level to gently sloping landforms. Creek lines and small water holding bodies can also be a focus of Aboriginal occupation. Boundaries between changes in vegetation can also be a focus for occupation. Within Block 5, such features exist with two 1st order creek lines being present. Block 5 has been subject to ploughing and planting and as a result there is a moderate probability of these sites occurring.

Burials – are generally found in sandy contexts or in association with rivers and major creeks. No such features exist within Block 5, and therefore such sites are unlikely to occur.

Culturally Modified Trees (CMT) – these require the presence of mature trees. Isolated mature native trees remain within Block 5. There is low potential for this site type to be present.

Isolated Artefacts – are present across the entire landscape, in varying densities. As Aboriginal people traversed the entire landscape for thousands of years, such finds can occur anywhere and indicate the presence of isolated activity, dropped or discarded artefacts from hunting or gathering expeditions or the ephemeral presence of short term camps. There is a moderate probability for the presence of these sites but due to high levels of previous disturbance it would be unlikely that they would be in-situ.

Potential Archaeological Deposits – consisting of areas considered to hold higher potential for subsurface deposits then the surrounding landforms the identification of areas of PAD are based on landform and predictive modelling. For the context of Block 5 these would consist of level areas of terrace or lower slopes in the proximity of creek lines. Creek lines are present and there is a low to moderate potential for areas of PAD to be present.

2.6 DESKTOP ASESSMENT SUMMARY

The desktop assessment and review of previous studies has shown that registered heritage sites (Aboriginal and Historical) are present within the wider region but none are located within Block 5. The recorded Aboriginal heritage sites in the region consist of artefact scatters or isolated finds of lithic artefacts, usually in association with water lines but also on small knoll features. The majority of these sites were allocated low significance by the report authors on both scientific and cultural values.

Adjacent to Block 5 are the historical properties of Callum Brae and Mugga Mugga. Block 5 may retain historical items within its boundaries but due to the intensive use of the area (as shown by aerial photographs which show ploughing through all paddocks at various periods) the potential is considered to be low. These past disturbances will also have impacted on the survival rates of Aboriginal sites, along with the removal of trees and native vegetation.

No areas of high resource concentration or lithic resource are known within Block 5. No major water bodies or creek lines are present. Water resources are limited with two 1st order creek lines running east through Block 5 to join Jerrabomberra Creek distant to the east.

3 ASSESSMENT RESULTS

3.1 FIELD SURVEY METHODOLOGY

Field survey over Block 5 was undertaken on the 26th November 2018 by Lyn O'Brien (Past Traces) and 4 members of the RAOs. Field survey consisted of pedestrian transects across Block 5 sampling all landforms. Survey units were defined by the frequent occurrences of fences through Block 5. Each paddock was allocated a survey unit number and transects ran from fence line to fence line. Where present mature trees were inspected for cultural scarring and details of landform, details of any recorded sites and general conditions were noted throughout the survey using hand held GPS recorder.

House paddocks around the four properties in the immediate vicinity of the houses and sheds were not physically inspected in accordance with lessee wishes. These areas, from a visual inspection over the fences, appeared to have undergone major modification with landscaped gardens, garages, sheds, ornamental plantings and features such as pools or gazebos. It is considered highly unlikely that any Aboriginal heritage sites are located in these few areas of high and continuous impact.

Block 5 was walked by all participants at an approximate spacing of 10-15m across all land forms. The spacing effectiveness is based on Burke and Smith (2004) who concluded that effective survey coverage extends 2m to the side of each field survey participant. The number of participants ensured that all of the area surface was visibly inspected.

Two main factors contribute to the effectiveness of a field survey, ground surface visibility and rate of exposures.

Ground Surface Visibility (GSV) is the proportion of ground surface visible during the field survey. GSV is affected by conditions of grass coverage, leaf litter, imported gravels and fallen timber. A percentage rating of GSV is applied to each survey area (Terry and Chillinger 1955) based on the proportion of bare soil visible through the surface conditions. Exposures are defined as areas where bare soil is present due to erosional or disturbance factors and is separate and distinctive from the background GSV of the surrounding area. Exposures show the potential subsurface as well as surface contexts as they represent disturbed areas of soils.

3.2 FIELD SURVEY CONDITIONS

GSV was generally high across Block 5 due to the short, cropped grass and frequent rates of exposure throughout. Stock were present in the paddocks and exposures seem to be the result of sheet wash erosion and gully erosion across the paddocks. Fence lines, gates and stock impact areas allowed for overall a large area of visible exposure. The GSV overall for Block 5 is considered to be high at 55%.

Conditions did not vary from one survey unit to the next as all paddocks contained similar conditions of grass coverage, frequency of exposures and disturbance. Ploughing has been undertaken across all paddocks and most paddocks have sparse tree coverage, either as small stands or isolated remnants. The exception to this was the south eastern corner, which has been used for a fruit orchard in the past and has been subject to deep ripping with resulting low ridgelines across the landform.

Soils appeared to be thin, composed of shales and clay where they were visible in exposures along creek lines or areas of disturbance. Only occasional remnant mature trees were present with the majority of trees being natural regrowth or areas of plantings from the 1960s.

Areas of exposure (estimated at an occurrence rate of 25%), were present in areas of small erosion scours confined to creek edges, access gates and stock disturbance areas. GSV within the areas of exposure was high estimated at 80%.

The conditions within Block 5 at the time of survey are shown in Plates 1 to 8.

Plate 1. North section

Plate 2. Northern creek line

Plate 3. Poplar plantings on north west boundary

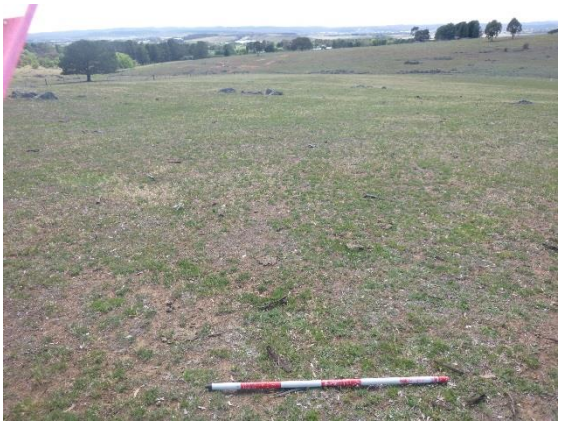

Plate 4. Undulating landscape in central section looking north.

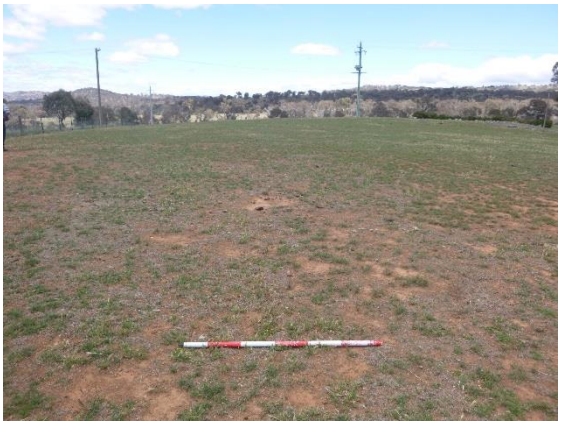

Plate 5. Crest landform in eastern potion

Plate 6. Dry drainage line in southern section

Plate 7. Dry creek line in south eastern section

Plate 8. Side slopes south eastern section

3.3 SURVEY RESULTS – IDENTIFIED HERITAGE SITES

The survey identified one Aboriginal heritage site designated SYM1, one potential culturally modified tree (CMT) and an area of Potential Archaeological Deposit (PAD). Details of each of these recorded sites are provided in the following sections with site locations shown on Figure 7.

3.3.1 Symonston1 (SYM1)

Sym 1 consists of two lithic artefacts separated by 25m within an area of open paddock. GSV within this area was high at 90%. The exposure is in excess of 50m in length and 10m wide. The site location is shown in Plate 9 and the artefact in Plate 10. Artefact details are provided in table 3 and the site location is shown in Figure 7. It is likely that the site contains additional artefacts but as a result of the high disturbance in this area subsurface potential is considered to be low.

Redacted

Plate 9. Site location a

Plate 10. Artefact Sym1

Redacted

Plate 11. Location of artefact b.

Plate 12. Artefact Sym1

Table 3. Sym1 - Artefact Details.

Artefact type	Artefact Materials	Dimensions (mm) (l x w x b)	Comments
Proximal Flake	Red Chert	17 x 11 x 8	Flaked platform, snapped flake, usewear on both lateral margins.
Retouched Flake	Grey silcrete	36 x 32 x 8	Flaked platform, feather termination, retouch flakes on left lateral, distal and proximal margins, circular form

3.3.2 Symonston 2 (SYM2)

Sym 2 consists of a potential CMT located in Block 5. The scar is located on the south east face of the trunk at a height of 115cm from the ground.

Above the scar the trunk shows signs of constriction over its growth span, also seen below the scar. The scar may be the result of impact during its youth and fits this criteria as specified by Long (2005). Numerous trees in the surrounds show signs due to bird damage and stock impacts, with a large number shielded by wire mesh to stop stock from causing further damage.

To provide further information on the cause of the scar an arboreal assessment of the tree determining its age and past life should be undertaken. When provided this information should be incorporated into this report and the findings of heritage significance.

REDACTED

Plate 13. Details of scar face

3.4 SURVEY RESULTS – AREAS OF IDENTIFIED POTENTIAL

3.4.1 PAD (SYM 3)

The field survey identified one area of moderate archaeological sensitivity which has been called SYM 3. This area of sensitivity is located on a small knoll on the western banks of a unnamed ephemeral tributary to the Jerrabomberra Creek. At the time of the field survey this tributary was dry. The deposits are unlikely to contain highly significant material and would most likely consist of low density deposits if cultural material is present.

The designation of Sym3 as an area of PAD was based on the following factors:

- Landform –elevated landform, directly above the creek line
- Proximity to water resources – shown to be co-related to site location in the region.
- Disturbance – this area has suffered little disturbance and hold potential for *insitu* deposits.

The location of the area of PAD is shown in Plate 14 and on Figure 7.

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Plate 14. PAD Sym3 (Shown by arrow)

Figure 7. Location of recorded sites

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4 SIGNIFICANCE ASSESSMENT

4.1 SIGNFICANCE CRITERIA

Management of a heritage place or object is guided by the 'significance' or heritage value of the item or place. To assess this significance the Burra Charter (Icomos 2013) defines a 'best practice' and widely accepted methodology for assigning significance. The cultural heritage values of a site or place are broadly defined in the Burra Charter as the 'aesthetic, historic, scientific or social values for past, present or future generations' (Marquis-Kyle and Walker 1992: 21).

In the assessment of Aboriginal heritage places or objects, although a range of values may be present, the primary criteria are scientific/archaeological values and social/Aboriginal cultural values. The definition of both of these terms as applied in the assessment process to the Aboriginal, historical and natural heritage sites present within the project area is provided below.

4.1.1 Social Significance

Social or cultural significance refers to items or places which are valued by the Aboriginal community. The level of social or cultural significance can only be decided by the Aboriginal community and is assessed through communication with community representatives. In the ACT these representatives are the Representative Aboriginal Organisation (RAO) who have been consulted for the project. Cultural values to the community may be the result of historical events, orally transmitted cultural knowledge, or archaeological sites that by demonstrating the past occupation of the landscape, provides a linking connection from the past to the present.

4.1.2 Scientific Significance

Scientific values are assessed on the potential of the heritage place or object to provide additional significant knowledge or data on the history, occupation or traditional lifeways of past Aboriginal people in all its forms. This knowledge or data can include past historical occupation of the landscape, activities (including European farming or Aboriginal hunting, fishing and gathering) and technology (including weaving, wood working and lithics). Scientific significance can be summarised as research potential, which is based on the occurrence rate of the site (representativeness) and its state of preservation (intactness or level of disturbance) within its local context. This system is shown in Table 4 below.

Table 4. Scientific Significance Matrix

Representativeness		Research potential			
	Rare	Moderate	High	High	High
	Occasional	Low	Moderate	Moderate	High
	Common	Low	Low	Low	Moderate
	State of Preservation	Highly disturbed	Partially disturbed	Slightly disturbed	Intact

4.2 ACT HERITAGE CRITERIA

Having determined that the object or place holds heritage significance, it may warrant listing on the relevant heritage register, thus providing the heritage object or place with recognition and statutory protection. Within the ACT heritage protection and significance is assessed under Section 10 of the *Heritage Act 2004*, which states:

A place or object has ***heritage significance*** if the place or object meets 1 or more of the following criteria (the ***heritage significance criteria***):

(a) importance to the course or pattern of the ACT's cultural or natural history;

(b) has uncommon, rare or endangered aspects of the ACT's cultural or natural history;

(c) potential to yield important information that will contribute to an understanding of the ACT's cultural or natural history;

(d) importance in demonstrating the principal characteristics of a class of cultural or natural places or objects;

(e) importance in exhibiting particular aesthetic characteristics valued by the ACT community or a cultural group in the ACT;

(f) importance in demonstrating a high degree of creative or technical achievement for a particular period;

(g) has a strong or special association with the ACT community, or a cultural group in the ACT for social, cultural or spiritual reasons;

(h) has a special association with the life or work of a person, or people, important to the history of the ACT.

Although other criteria may in cases be applicable, criteria c, d and g generally apply to Aboriginal heritage places or objects located within the ACT.

4.3 ASSESSMENT OF SIGNIFICANCE

The newly identified site of Sym1 and Sym2 when assessed against the criteria and in accordance with the Heritage Assessment Policy (ACT Heritage Council 2018) resulted in the following designations of significance.

4.3.1 Social values

Following discussions with the RAOs on site, the significance of the sites to the Aboriginal community has been assessed as low for Sym1. All sites hold heritage significance to the Aboriginal community, providing information and evidence of the past usage of the landscape by Aboriginal people. Larger and rarer site types hold higher levels due to the ability to educate the younger generation and the wider population as to the depth of Aboriginal culture. Sym1 is a common site type and consists of common artefact types and being on private land are not accessible to the Aboriginal community.

CMT's are an important site type and although Sym 2 may be natural in origin, until assessed the site is held to hold high significance to the Aboriginal community.

It is the view of the RAOs that all sites should be respected, either by avoidance of impacts or if impacts are unavoidable by mitigation strategies, such as recording and salvage collection. The return of artefacts to "country" is of utmost importance to maintain their connection to the landscape.

4.3.2 Scientific values

Based on the criteria in Section 4.1.2 rankings of scientific significance have been allocated to the known heritage sites. The results of the analysis are provided in the following table.

Table 5. Scientific values

Site Name	Representative rating	Preservation rating	Scientific value
Sym1	common	disturbed	Low
Sym2	uncommon	Fair/moderate	Moderate

4.3.3 Heritage Act 2004 criteria

When assessed against the *Heritage Act 2004* criteria the following results:

(a) importance to the course or pattern of the ACT's cultural or natural history;

This criterion does not apply for any of the sites

(b) has uncommon, rare or endangered aspects of the ACT's cultural or natural history;

This criterion does not apply for any of the sites

(c) potential to yield important information that will contribute to an understanding of the ACT's cultural or natural history;

Partially Applicable – the sites can provide further data to support, overturn or strengthen theories of Aboriginal occupation.

The Heritage Assessment Policy (2018) defines the inclusion threshold for this criterion to be that:

> "The information that might be obtained through the investigation of the place or object is likely to provide a ***substantial*** contribution to an understanding of an important aspect of the ACT's cultural or natural history (p18)".

While the sites can provide additional information as to site location within the ACT, the practise and purpose is understood and no **substantial new** information can be gained from further study.

(d) importance in demonstrating the principal characteristics of a class of cultural or natural places or objects;

This criterion does not apply as the three sites whilst characteristic example of a class of artefacts are not important in demonstrating artefact features. Better examples are existing within the ACT.

(e) importance in exhibiting particular aesthetic characteristics valued by the ACT community or a cultural group in the ACT;

This criterion does not apply

(f) importance in demonstrating a high degree of creative or technical achievement for a particular period;

This criterion does not apply

(g) has a strong or special association with the ACT community, or a cultural group in the ACT for social, cultural or spiritual reasons;

This criterion does not apply

The Heritage Assessment Policy (2018) states that evidence that the association between the place or object and the ACT community or a cultural group in the ACT is 'strong' or 'special' must be shown rather than asserted to fulfil this criterion. For an association to be 'strong' or 'special the following must apply:

- the community or cultural group has a deep sense of ownership/stewardship and/or connectedness to the place or object
- the site symbolically represents some aspect of the past which contributes to a sense of identity for the community or a cultural group
- the community or a cultural group gathers for ritual or ceremonial purposes or for social or cultural (including recreational) interaction.

Whilst all heritage sites have a special association for Aboriginal people in the ACT as a part of their continuing and developing cultural traditions, based on the criteria and significance thresholds as defined in the heritage assessment policy (p27), none of the newly recorded Aboriginal sites meet this criterion and no association has been proven by the RAOs.

(h) has a special association with the life or work of a person, or people, important to the history of the ACT.

This criterion does not apply.

4.3.4 Summary

As a result of the assessment against the criteria and the Heritage Assessment Policy (ACT Heritage Council 2018) Sym 1, Sym 2 and Sym 3 do not meet any of the criteria for listing to the ACT Heritage Register although the sites remains protected under the *Heritage Act 2004* and can only be impacted with approval granted by the ACT Heritage Council.

5 MANAGEMENT RECOMMENDATIONS

5.1 IMPACT ASSESSMENT

Block 5 is currently under pastoral lease from the ACT Government. No registered Aboriginal or historical sites are present within Block 5. A field survey was undertaken for the assessment which located one previously unrecorded Aboriginal heritage site, one potential CMT and one area of PAD within Block 5.

The proposed agricultural subdivision of Block 5 will involve excavation of soils, construction of houses and access roads and installation of associated infrastructure. These impacts would be intensive within confined areas of Block 5.

Any heritage sites located within Block 5 are at risk of damage through the proposed works. As a result of the background review, assessment of landforms and heritage field survey heritage impacts may occur from the development of Block 5 at sites Sym1 -3. These impacts can be minimised if the management recommendations developed for the project are implemented.

5.2 RECOMMENDATIONS

The recommendations are based on the following information and considerations:

- Results of the ACT Heritage register search and locations of recorded sites in the vicinity of works
- Consideration of results from other local archaeological studies
- Results of the field survey
- Consultation with RAOs
- Legislative context for the development proposal.

As a result of the assessment completed for the project the following findings and recommendations apply:

Findings

- Three Aboriginal heritage sites (Sym1, Sym2 and Sym3) are located in Block 5. These sites will require further assessment if impacts cannot be avoided through design.
- As a result of the assessment against the criteria and the Heritage Assessment Policy (ACT Heritage Council 2018) Sym 1, Sym 2 and Sym 3 do not meet any of the criteria for listing to the ACT Heritage Register although the sites remains protected under the *Heritage Act 2004* and can only be impacted with approval granted by the ACT Heritage Council.
- Adjacent to Block 5 are the historical properties of Callum Brae and Mugga Mugga. Block 5 may retain historical items within its boundaries but due to the intensive use of the area (as shown by aerial photographs which show ploughing through all paddocks at various periods) the potential is considered to be low. These past disturbances will also have impacted on the survival rates of Aboriginal sites, along with the removal of trees and native vegetation.

Recommendations

- One identified heritage site Sym1 (Aboriginal) is located within Block 5. Impacts should be avoided at this site. If impacts will occur then a Statement of Heritage Effects (SHE) will need to be approved by the ACT Heritage Council prior to works commencing.
- A potential CMT (Sym2) has been identified within Block 5. Assessment of this tree by a qualified arborist should be undertaken to determine if the origin of the scar is cultural or natural.
- An area of PAD (Sym3) has been identified within Block 5 overlooking a 1st order creek line. Subsurface testing of this area of PAD will be required if impacts are to occur at this location. A subsurface methodology will be developed and submitted to the ACT Heritage Council for endorsement prior to any works being undertaken. Results will be reported in a SHE for the project.
- If impacts can be avoided at the three Aboriginal heritage sites, they do not pose a heritage constraint on the project. If impacts will occur the above recommendations must be applied.
- There are no other heritage constraints on the project.
- All Aboriginal objects and places are protected under the ACT *Heritage Act 2004*. It is an offence to disturb an Aboriginal site without approvals granted by the ACT Heritage Council. Should any Aboriginal objects be encountered during works then works must cease immediately in the vicinity of the find, and the find should not be moved until assessed by a qualified archaeologist with the participation of the RAOs. Adherence to the Unexpected Discovery Plan (UDP) attached at Appendix 2 is required.
- This CHA should be submitted to ACT Heritage Council for endorsement prior to works commencing.

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APPENDIX 1. ABORIGINAL CONSULTATION

RAO	Date and type of contact	Response
All RAOs	9th November 2018 – phone call to all RAOs to arrange participation in field work for 12th April Follow up email to Wally Bell and Matilda House	Paul House – will send rep James Mundy – will attend Carl Brown – will attend Wally Bell - will send rep
All RAOs	26th November 2018 – field survey and on site meeting	Reuben house Justin Bell Robert Mundy. Carl Brown All agreed with recommendations – one site found and low significance of area – testing of PAD and assessment of scarred tree required
All RAOs	4/12/2018 - Draft Report emailed/circulated for comments	7/12/2018 – James Mundy – agree with recommendations, no problems with findings of report. 5/12/2018 – email Paul House. No issues with report.
All RAOs	11/12/2018 – Follow up phone calls/emails to all RAOs requesting feedback	

APPENDIX 2. UNEXPECTED DISCOVERY PLAN

The process outlined in the unanticipated discovery provides guidance to project personnel so that obligations in accordance with the *Heritage Act 2004* can be meet.

If any items are uncovered during the course of works, which are considered to possibly be of Aboriginal or historical significance the following unanticipated discovery plan should be implemented. All Aboriginal and significant historical heritage places or objects are protected under the *Heritage Act 2004*. Offence provisions (Section 74 and Section 75) of the Act apply to impacting heritage sites. Any unanticipated find of potential heritage value should follow the process outlined below to avoid breaching obligations under the Act.

1. UNEXPECTED DISCOVERY OF ABORIGINAL CULTURAL HERITAGE

If suspected Aboriginal Heritage items (isolated stone artefacts, artefact scatters, archaeological deposits or scarred trees) are found then the following management process must be implemented:

1. Work must immediately stop in the area within a buffer zone of 10 metres from the primary grid coordinate.
2. ACT Heritage (132281) must be informed of the suspected find asap and within 5 working days.
3. A suitably qualified heritage advisor and the Representative Aboriginal Organisation (RAOs) must be engaged to assess the potential site.
4. If the items are not considered to be Aboriginal, activity may recommence.
5. If the items are considered to be Aboriginal, the Proponent, RAOs and the Cultural Heritage Advisor, will discuss the possibility of avoiding and minimising harm to the Aboriginal cultural heritage, and the Proponent must avoid or minimise harm to the Aboriginal cultural heritage, where possible.
6. If the items are considered to be Aboriginal, an assessment report will need to be prepared and submitted to the ACT Heritage Council. After approval from the ACT Heritage Council, the artefacts should be recorded and salvaged in accordance with the approved methodology.
7. After approval of the salvage report, works can recommence.

2. UNEXPECTED DISCOVERY OF HISTORICAL CULTURAL HERITAGE

If suspected historical items are found then the following management process must be followed:

1. Work must immediately stop in the area within a buffer zone of 10 metres from the primary grid coordinate.
2. ACT Heritage must be contacted on 13 22 81 for advice.
3. A suitably qualified heritage advisor needs to be engaged to assess the potential site.
4. If the items are not considered to be historically significant, activity may recommence.

5. If the items are considered to be historically significant, a management recommendation should be given by the heritage advisor.

6. Following approval by ACT Heritage Council and completion of the management recommendation, the activity may then recommence.

3. UNEXPECTED DISCOVERY OF HUMAN REMAINS

If any suspected human remains are discovered during any works, all activity in the areas must cease immediately. The following contingency plan describes the actions that must be taken in instances where human remains or suspected human remains are discovered. Any such discovery at the activity area must follow these steps.

Discovery:

- If any suspected human remains are found during any activity, works in the vicinity **must** cease.
- All personnel should leave the area immediately
- The remains must be left in place, and protected from harm or damage.

Notification:

- The ACT Federal Police must be notified immediately. All details of the location and nature of the human remains must be provided to the relevant authorities.
- If there are reasonable grounds to believe that the remains are Aboriginal, ACT Heritage must be contacted immediately on **13 22 81**.
- The Project Manger must be contacted immediately.

Process:

- If the remains are considered to be Aboriginal by the AFP an appropriate management and mitigation, or salvage strategy will be implemented following consultation with the RAOs and ACT Heritage Council through ACT Heritage.

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Our ref 180494

Contact: Paul Williams

13 December 2018

BLOCK 5 SECTION 103 SYMONSTON
STATEMENT OF TRAFFIC IMPACT

Sellick Consultants, on behalf of Purdon Planning, has prepared this traffic impact statement for the proposed subdivision of Block 5 Section 103 Symonston (site).

The TCCS Guidelines for Transport Impact Assessment (guide) has been acknowledged in this assessment. If the proposed subdivision was treated as a multi-unit development the proposed development would not warrant a traffic assessment. That is, the guide indicates that a multi-unit development with less than 60 units does not require an assessment.

The existing site is summarised as follows:

- It is zoned under the Territory Plan 2008 as a NUZ1: Broadacre;
- The block size is 357,905m^2 in size;
- Four houses are contained on the site;
- The site has road frontages onto Hindmarsh Drive, Mugga Lane and Narrabundah Lane.
- There are two existing driveways off Mugga Lane; and
- There are two existing driveways off Narrabundah Lane.

Traffic surveys (dated 8th September 2012) for Mugga Lane indicated that it was subject to 11,460vpd. Assuming a growth of 1% per annum the current traffic volumes are expected to be approximately 12,165vpd in 2018. The ACT Government's Road Hierarchy Plan indicates Mugga Lane is an arterial road, which is reflected in the operating traffic volumes.

Traffic data for Narrabundah Lane was not available at the time of preparing this statement. In accordance with the ACT Governments' Road Hierarchy Plan, Narrabundah Lane is a classifies as a Major Collector. Based on the Estate Development Code, traffic volumes typically vary between 3000 – 6000vpd on major collectors.

The proposed subdivision replaces Block 5 Section 103 with eight leases, refer to attachment A for the subdivision plan. The proposed subdivision is assessed to have the following traffic impact:

- There will be an increase of 4 houses on the site. Based on rates provided within the Estate Development Code, this will increase the traffic generation of the site by 32vpd.
- The number of driveways on Mugga Lane will be reduced. One existing driveway will be retained and one will be demolished. The single driveway will connect two blocks to Mugga Lane via a Right of Way easement. The provision of a single connection servicing multiple blocks on an arterial road is beneficial compared to providing multiple access points. It reduces the risk of conflict and reduces the number of interruptions to the traffic stream. This approach is also recommended under Austroads *Guide to Road Design Part 4 : Intersections and Crossings,* and Austroads *Guide to Traffic Management Part 5: Road Management.*
- The two existing driveways on Narrabundah lane will be maintained. Additionally, 2 new driveways will be provided to service four blocks.

- The proposed subdivision does not include access provisions on Hindmarsh Drive.
- The traffic generation from the proposed subdivision will be distributed as follows:
    - The number of vehicles accessing/egressing the site via Mugga Lane will be reduced by eight vpd;
    - The traffic volumes on Narrabundah Lane will be increased by 40 vpd (a maximum increase of approximately 1.3%). Narrabundah Lane is the 'minor road' of the 3 available for road frontages. Consequently, the negligible increase in traffic generation on the minor road is deemed acceptable.

Based on the above, the proposed subdivision and associated cumulative impact of a possible future 4 additional residential dwellings will have a negligible impact on the operation of Narrabundah Lane and improve the traffic conditions on Mugga Lane. It is noted that during the detailed design phase all vehicle access points are to be designed to comply with AS2890.1 *Parking Facilities Part 1: Off-street car parking*.

Consequently, the surrounding road network is assessed as having adequate capacity to service the proposed subdivision and future 4 additional residential dwellings. The proposed subdivision is recommended for approval on the grounds of traffic and vehicle access.

Should you have any comment or query pertaining to the above, please do not hesitate to contact the undersigned.

Yours faithfully,

Paul Williams
B.Eng.(Civil)
Civil Engineer
for Sellick Consultants Pty Ltd

sellick consultants

6th December 2018

Purdon Planning Pty Ltd
Unit 4, Cooyong Centre
1 Torrens Street
BRADDON ACT 2612

Att: Rob Purdon

Re: 180494

WATER SENSITIVE URBAN DESIGN
PROPOSED SUBDIVISION
BLOCK 5 SECTION 103 SYMONSTON

Sellick Consultants Pty Ltd has been requested to assess this development proposal with respect to compliance with the requirements of the Territory Plan for Water Sensitive Urban Design and potential impact on water quality.

The site currently houses 4 residential dwellings. The development proposal consists of site subdivision that would permit the construction of up to a further 4 residential dwellings across a total of 8 proposed allotments – refer Purdon Planning Development Plan. It is noted that this development application does not include any residential dwelling proposals, just indicative building envelopes with indicative house sites.

The zoning for the blocks associated with this development is NUZ1 (Broadacre) and TSZ1: Transport. The applicable development code for this development proposal is *Non-Urban Zones Development Code* and *Transport and Services Zone Development Code*.

Non-Urban Zones Development Code

6.2 Water Use

(i) There is no applicable rule

(ii) Criteria – C33: Where relevant, development complies with the requirements of the Water Use and Catchment General Code.

Based on Figure 1: Water Use Catchments of the Water Use and Catchment General Code, this site catchment is categorized "Urban Area". This makes the site not subject to the Water Use and Catchment General Code.

Transport and Services Zones Development Code

6.2 Mains Water Consumption

Evidence is provided that shows the development achieves a minimum 40% reduction in mains water consumption compared to an equivalent development constructed in 2003.

As there are no proposed works that use mains water this rule is not applicable to this application.

6.3 Stormwater Quality

Sites of size greater than 5,000m^2 or roads longer than 1km need to provide evidence showing a reduction in average annual stormwater pollutant export load of:

- Reduction in Total Suspended Solids (TSS) by at least 60 per cent
- Reduction in Total Phosphorous (TP) by at least 45 per cent
- Reduction in Total Nitrogen (TN) by at least 40 per cent

As the proposed works constitute an area of less than 5% of the total area and hence this rule is not applicable to this application.

6.4 Stormwater Quantity

All sites greater than 2,000m^2 and subject to redevelopment need to provide evidence of:

- The capacity of the existing pipe (minor) stormwater connection is not exceeded in 1-in-10 year storm event and the capacity of the existing major overland stormwater system is not exceeded in the 1-in-100 year storm event, or,
- The 1-in-5 year and 1-in-100 year stormwater peak run off does not exceed pre-development levels.

As the site is not subject to redevelopment this rule is not applicable to this application.

With reference to the above, the development proposal is assessed as meeting the requirements of the Territory Plan for Water Use.

Further to the above, the potential cumulative impact on water quality posed by future construction of 4 dwellings under future development application/s has been considered. It is understood that blocks will enable construction of 4 single residential dwellings in the future. With standard residential development and landscaping, post development the affected area will have negligible effect on the stormwater quality or quantity on the stormwater flows leaving the site. The anticipated higher levels of site vegetation development and management across smaller allotments is expected such that the water quality discharge will likely improve post construction and establishment of associated landscaping.

Element 6.2 Mains Water Consumption of the Transport and Services Zones Development Code would still be applicable to these developments and individual developments would need to provide evidence of compliance with their future development applications..

Should you have any comment or query pertaining to the above, please do not hesitate to contact me.

Yours faithfully,

Alex McLennan
B.Eng.(Civil) MIE Aust CPEng NER RPEQ
Senior Civil Engineer/ Water Sensitive Urban Design Manager
for Sellick Consultants Pty Ltd

BLACKASH
BUSHFIRE CONSULTING

Bushfire Hazard Assessment

Agricultural Subdivision
Block 5 Section 103 Symonston

Prepared for

Purdon Planning Pty Ltd

BPAD Bushfire Planning & Design Accredited Practitioner Level 3

13 December 2018

Version V1.1

Document Tracking

Project Name:	Symonston Block 5 Section 103
Prepared by:	Lew Short
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Document Control

Version	Primary Author(s)	Description	Date Completed
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Disclaimer

Glossary of Terms

APZ	Asset protection zone
AS2419	*Australian Standard – Fire hydrant installations*
AS3745	*Australian Standard – Planning for emergencies in facilities*
AS3959	*Australian Standard – Construction of buildings in bushfire-prone areas 2009*
BAL	*Bushfire Attack Level*
BCA	*Building Code of Australia*
BFSA	Bush Fire Safety Authority
EPA Act	*Environmental Planning & Assessment Act 1979*
FDI	Fire Danger Index
ha	Hectare
m	Metres
PBP	*Planning for Bush Fire Protection 2006*
RF Act	*Rural Fires Act 1997*

1. Introduction

Purdon Planning have commissioned Blackash Bushfire Consulting (Blackash) to prepare a Bushfire Hazard Assessment in support of the subdivision of Block 5 Section 103 Symonston (see Figure 1) into 8 blocks (Figure 2) used for agricultural/broadacre purposes (the Site).

The site has an area of approximately 37ha and is adjacent to Hindmarsh Drive, Mugga Lane and Narrabundah Lane. It is currently used as an agricultural property and contains four (4) dwellings. At present the property has eight (8) access points from adjacent roads. The site also contains a number of mature remnant eucalypts, a small area (approx 3ha) of native grasslands and a small area (approx 2ha) of box gum grassy woodland.

The Site is bushfire prone. All of the understorey on the property has been heavily grazed over many years and includes large areas of introduced pasture.

Whilst the specific DA does not seek residential allotments and does not have any direct impact on the environment, pre lodgment discussions with the ACT Planning & Land Authority (**ACTPLA**) has determined that the Development Application (**DA**) is required to be lodged in the "impact tract" for assessment because of the potential for cumulative impacts associated with future development consequences, particularly in relation to loss of native vegetation.

Under normal circumstances and impact track assessment would require preparation of an Environmental Impact Statement (**EIS**). However, under section 211 of the *Planning and Development Act 2007* (**the Act**), there is provision for the applicant to prepare and lodge an EIS exemption on the basis that adequate documentation can be provided to demonstrate that the proposed development will not have any immediate or longer term adverse environmental impacts.

A separate s211 submission has been prepared by Purdon Planning Pty Ltd on behalf of Symcanfin Pty Ltd for a DA for a subdivision and crown lease variation on the subject site. This submission concludes that, based on a detailed assessment of site conditions, environmental values and an assessment of potential cumulative impact that a full EIS is not warranted, and the development with appropriate mitigation measures will not have a significant environmental impact.

The bushfire provisions are based on the provision of nominal asset protection zones (APZ) around the existing four houses and nominal building footprints.

The subdivision design provides adjacent road access to all but two properties, where a right-of-way (ROW) access is proposed. The new properties range in size from 2.7 to 8.9 ha (subject to survey) and respect existing water courses. No native vegetation is disturbed in the subdivision.

The net effect of the proposed development will be a possible increase of four dwellings at some future stage, and provision for 3 horses per lease. Any additional dwellings beyond the existing four houses will be the subject of future (and separate) development approval by the Lessee(s).

The site is currently occupied by a teaching farm including livestock handling and display facilities. It also contains four (4) approved residential dwellings. The majority of the land area is grazed by a variety of stock.

The site is surrounded on 3 sides by roads. The eastern boundary borders two other farms including the historic Mugga Mugga homestead. North of Hindmarsh Drive are the suburbs of Narrabundah and Red Hill with residential areas, a golf course and a church located immediately opposite. To the west is a secure mental health facility, and correctional facility. To the south is the Callum Brae nature reserve and private leaseholds. Other land uses in the area include: two mobile home parks, AGSO, TGA, an animal pound and kennels, Murrays Bus Depot, and further afield the Mugga Lane waste disposal facility.

This DA does not include any application for construction of future dwellings or other structures. However, the proposed subdivision layout identifies building envelopes for new residential dwellings and private driveway connections for adjacent roads.

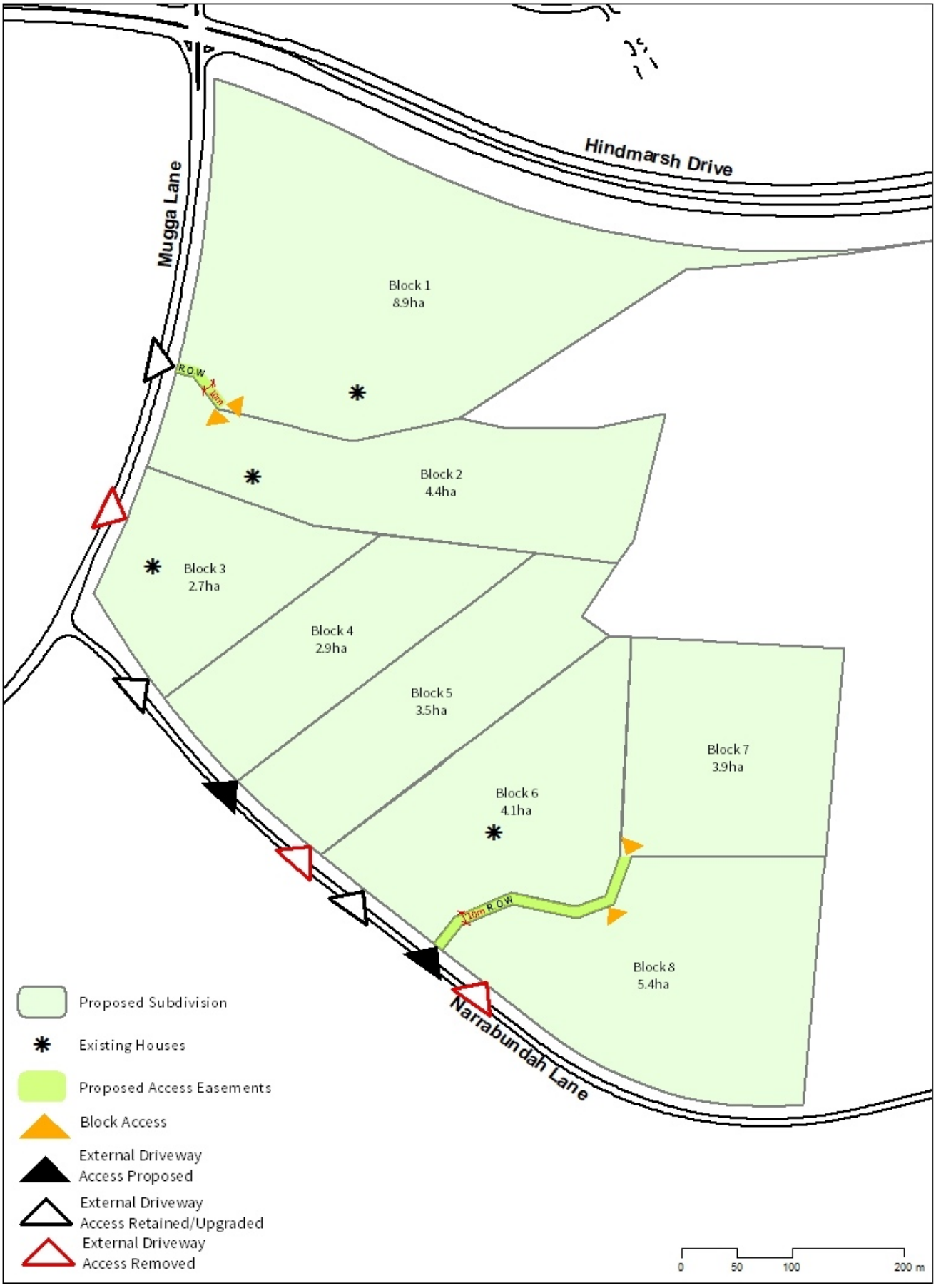
The ACT provides an integrated approach to new development in bushfire prone areas to reduce risk and build resilience. The ACT Strategic Bushfire Management Plan recognises the obligation of landholders to manage fuels and for new development to provide a degree of resilience from bushfire.

The Planning for Bushfire Risk Mitigation General Code provides guidance for new development in the ACT. Improved landuse planning, building codes and maintenance of systems to reduce the impact of bushfire provide mechanisms to reduce the bushfire risk and enhance the resilience of communities exposed to bushfire.

This assessment has been prepared by Lew Short (BPAD Level 3 BPAD 16373). The report has been completed by desktop assessment and detailed GIS analysis.

Figure 1 Site Location

Figure 2 Subdivision Plan (source Purdon Planning, 2018)



2. Legislative Framework

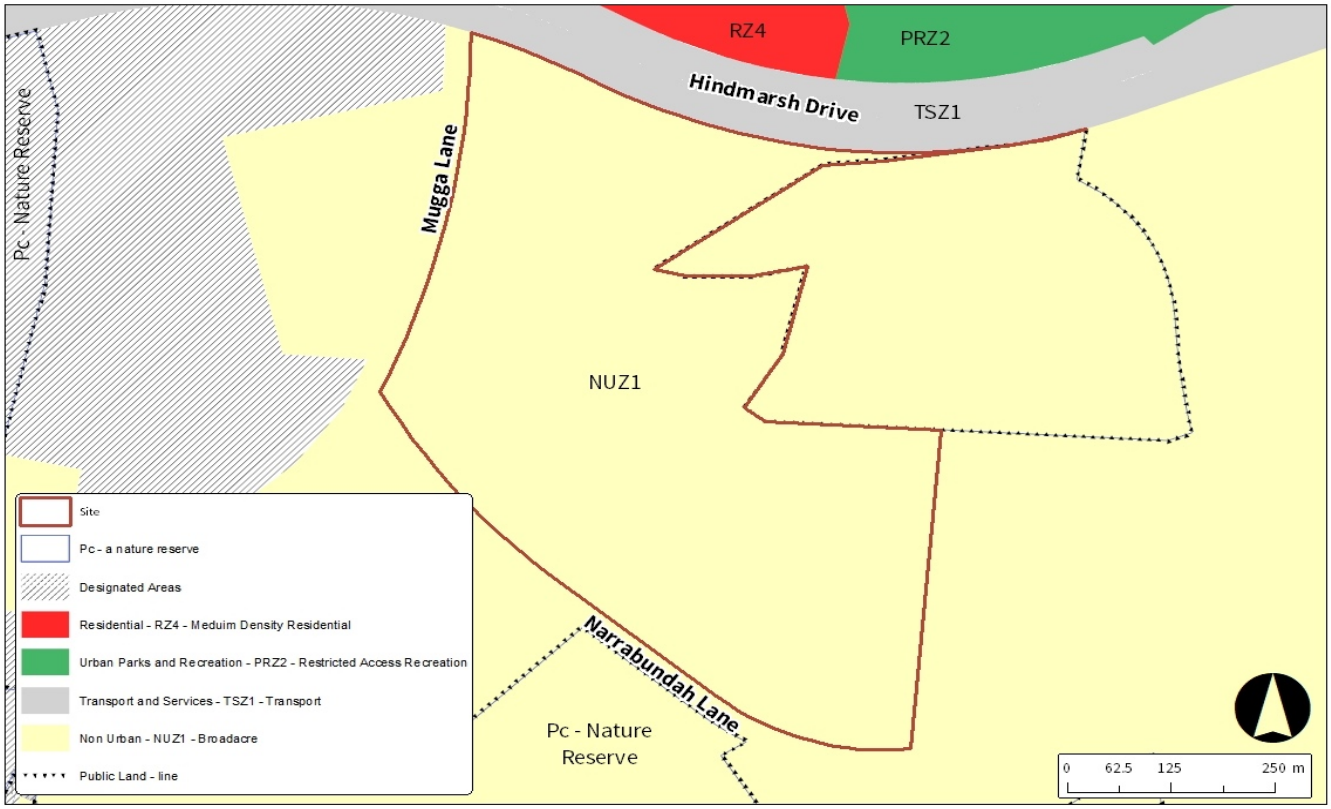
Under the Building Act 2004 and Building Regulations 2008, only non-urban areas in the ACT are declared as bushfire prone (see Appendix 1 Clause 44 of Building Regulations).

Planning for Bushfire Risk Mitigation General Code (PBRMGC) provides guidance for new development in the ACT. The Code references NSW Planning for Bushfire Protection 2006 (PBP) to provide a high level of compatibility between NSW and the ACT.

3. Site Zoning

The Site is currently zoned as NUZ1 – Non-Urban Broadacre Zone (Figure 3).

Figure 3 Site Zoning (source ACTMAPi)



The proposed lease variation and subdivision is consistent with the objectives of the NUZ1 zone. The proposed primary use will remain agricultural with an ancillary residential dwelling on each block. The proposed use will not impact the potential future use of the land

4. Bushfire Prone Land

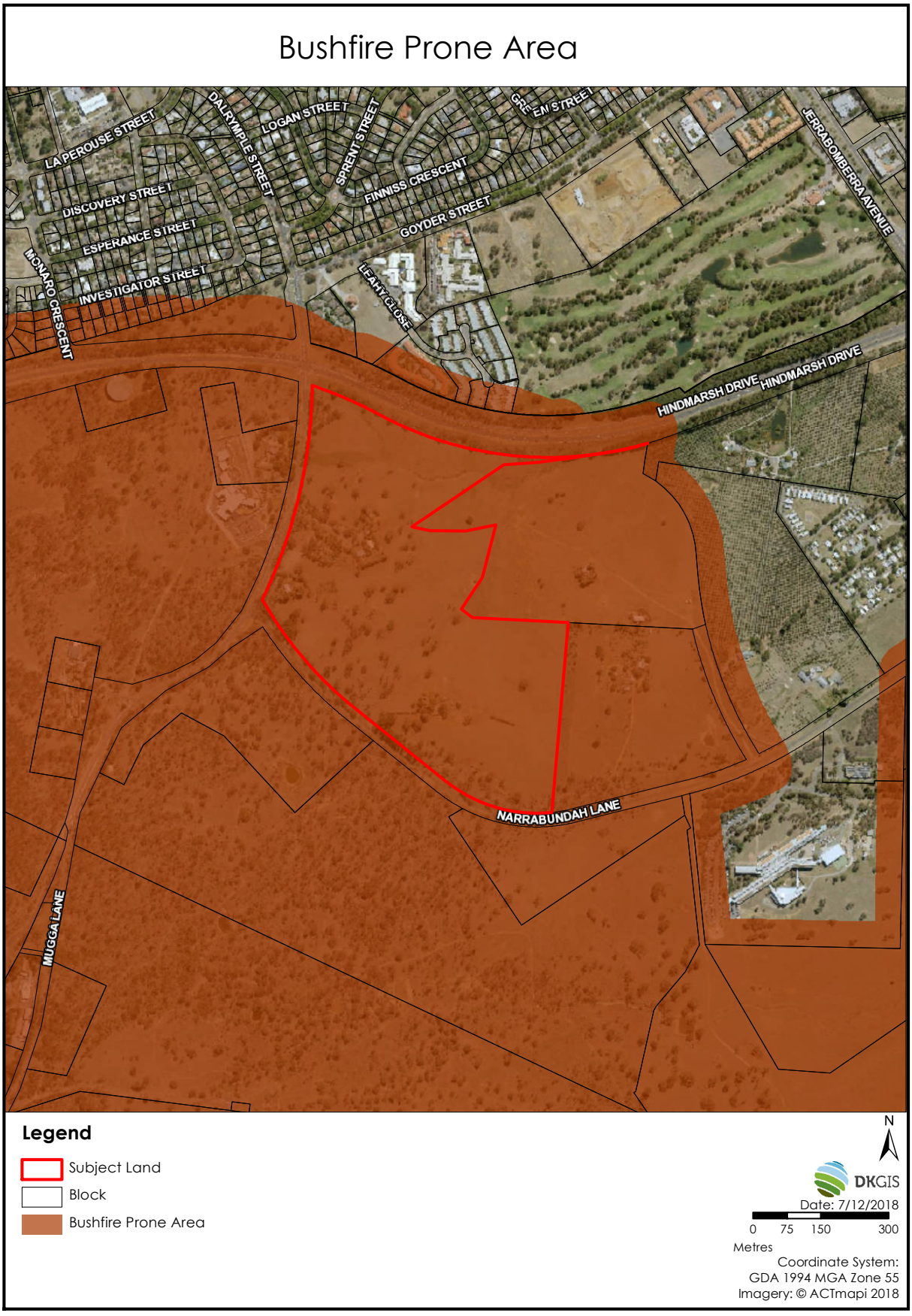
The site is identified as Bushfire Prone Area (**BPA**) (see Figure 3).

The BPA map is a single risk-based map that defines the area of the ACT that has been assessed as being at high risk to life and property due to bushfires. Canberra's built-up areas that are adjacent to forest and grassland are defined as BPAs, as is the ACT's entire rural area.

Bushfire prone land maps provide a trigger for the development assessment provisions and consideration of sites that are bushfire prone. Identifying the at-risk areas on the BPA map has two principal purposes:

- It requires assessment to determine mandatory construction standards for buildings under the Australian Standards AS 3959 – Construction of buildings in bushfire prone areas. Concurrent with the development of the SBMP, the ACT Government is considering arrangements to extend BPAs (for the purposes of AS 3959 assessments) to include part of the built-up area of Canberra.
- It provides the means by which people in the community can assess their personal level of risk and provide the basis for targeted community education and awareness campaigns for bushfires.

Figure 4 Bushfire Prone Land Map



5. Bushfire Threat Assessment

5.1. Methodology

This bushfire assessment is based on both a desktop assessment of the site assessment completed on Thursday 16 March 2017 utilising the following resources:

- ACTmapi
- Planning for Bushfire Protection (NSW RFS, 2006)
- Aerial mapping.

It was previously agreed with ESA to use the methodology within NSW Planning for Bushfire Protection 2006 (PBP) as it provided the most up to date and comprehensive site assessment methodology. As such, this assessment is based on mapping of vegetation formations and slope assessment in accordance with PBP.

Bushfire risk as influenced by fire history and future mitigation strategies (e.g. hazard reduction burning) has no bearing on the determination of bushfire protection strategies for future development at the sites. This is due to the fact that PBP assesses bushfire protection based purely on vegetation and slope (i.e. hazard and not risk), making the assumption that a fire may occur at a near worst-case scenario.

The methodology used in this assessment is in accordance with PBP and is outlined in the following sections.

5.2. Bushfire Hazard

An assessment of the Bushfire Prone Land is necessary to determine the application of bushfire protection measures such as APZ locations and future building construction levels. The vegetation formations (bushfire fuels) and the topography (effective slope) combine to create the bushfire threat that may affect bushfire behaviour at the site and which determine the planning and building response of PBP 2006.

5.3.Vegetation Assessment

PBP requires a classification of the vegetation on and surrounding the property. Predominant vegetation is classified by structure or formation using the system adopted by Keith (2004) and by the general description using PBP.

Vegetation types give rise to radiant heat and fire behaviour characteristics. The predominant vegetation is determined over a distance of at least 140 metres in all directions from the proposed site boundary or building footprint on the development site. Where a mix of vegetation types exist the type providing the greater hazard is said to predominate.

The site has an area of approximately 37ha and contains a number of mature remnant eucalypts, a small area (approx 3ha) of native grasslands and a small area (approx 2ha) of box gum grassy woodland. The woodland is sparse.

All of the understorey on the property has been heavily grazed over many years and includes large areas of introduced pasture as shown in Figure 5.

For the purpose of the assessment, the vegetation giving rise to the greatest threat has been determined as "grassland". The remnant trees on the site do not have understory or unmanaged vegetation underneath them. Figure 6 shows the vegetation on site as being a mixture of grassland and woodland.

Figure 5 Site photograph

5.4.Grassland Deeming Provisions

The pasture area within the subject site does enjoy ongoing agricultural management as pasture and rotational grazing occurs as an ongoing practice on the Site. It is expected that this management will continue. However, the potential exists for grassfires to affect the 4 existing houses and surrounds and a conservative approach has been taken to provide measures that accord with RFS positions for new development in areas that could be subject grassfires.

Planning for Bushfire Protection 2018 provides deeming provisions for grassland areas. This is recognition of the lower threat posed by grassland fires and their higher transition speed through an area. The main threat from grass fires is ember attack.

Grassed areas are capable of sustaining a fire. Under Australian Standard 3959, this is identified as low open shrubland, hummock grassland, closed tussock grassland, tussock grassland, open tussock, sparse open tussock, dense sown pasture, sown pasture, open herbfield, and sparse open herb field.

The RFS have provided an acceptable solution applying to properties in grassland hazard areas which replaces the site assessment procedure in AS 3959. PBP 2018 (p. 78) notes that:

> *In recognition of the characteristics of grass fires, the NSW RFS has developed a simplified and fast-tracked approval pathway. This pathway provides a solution through which any development which is located within a grassland hazard area is not subject to the site assessment requirements in Appendix 1.*
>
> *Due to the nature of grass fires, BAL-19, BAL- 29 and BAL- 40 do not apply in grassland hazard areas in NSW. Developments can be assessed as being in either BAL-12.5 or BAL-FZ only in grassland hazard areas.*

An area of 20m will be provided from the proposed assets as managed grassland (to APS standards). Table 7.9a pf PBP 2018 is applicable and is shown in Table 1.

Table 1 Grassland Deeming Provisions (source PBP 2018 p. 79)

BUSH FIRE PROTECTION MEASURE	DEEMING PROVISION
APZ	❯ an APZ of 20m is provided between the building and the hazard ❯ the APZ is wholly within the boundaries of the development site. ❯ the APZ is maintained as a mown area with grass heights less than 100mm
Construction	Construction in accordance with BAL-12.5 of AS 3959 and Table 7.4b of PBP.
Access	Comply with the access provisions in Chapter 5.
Water supply	Comply with the water supply provisions in Chapter 5.
Landscaping	Comply with the relevant provisions in Appendix 4.

5.5.Slopes Influencing Bushfire Behaviour

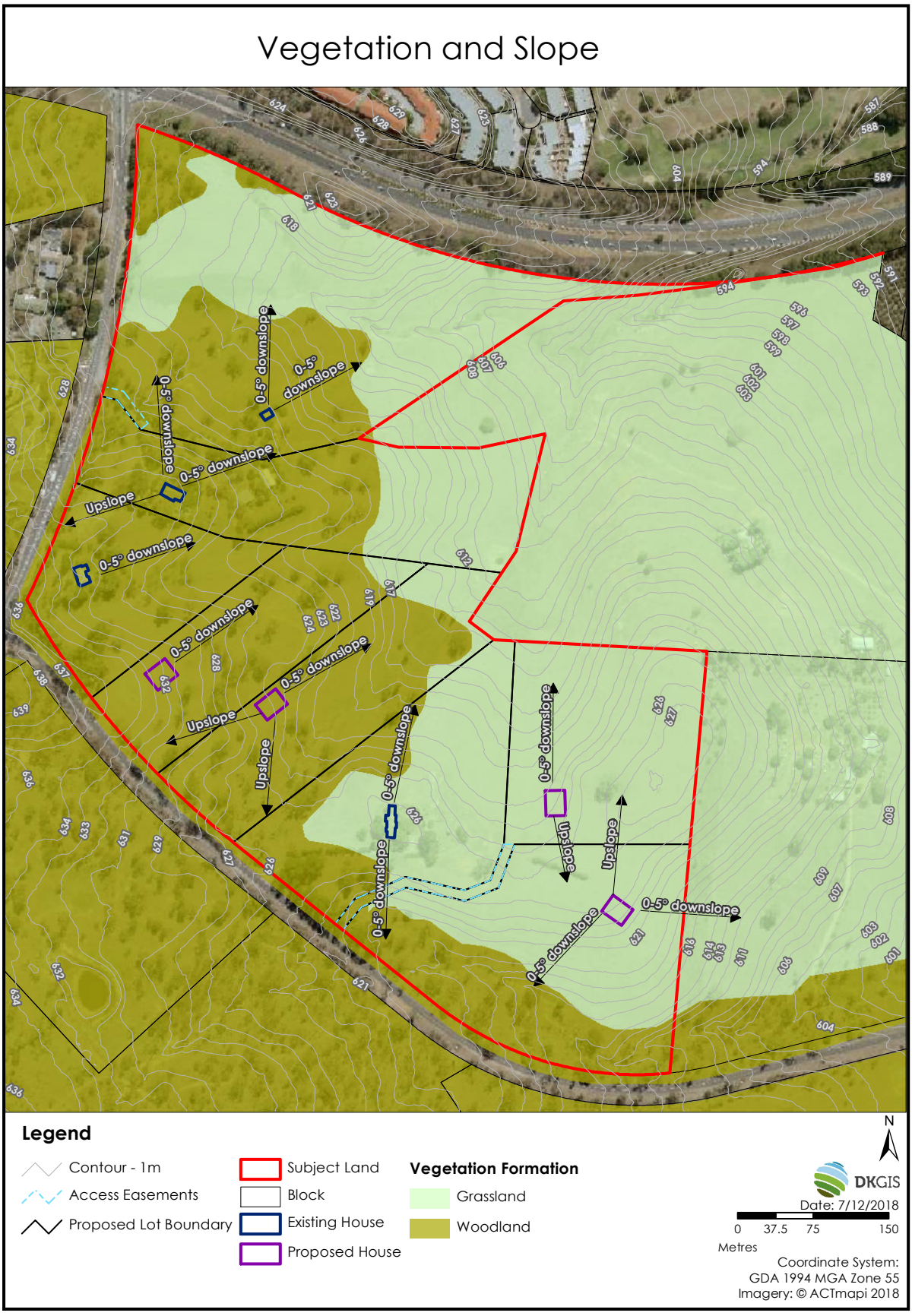
The site is undulating with a moderate fall towards the north east. A slight ridge runs along the southern edge of the site. Both sub-catchments on site drain into Jerrabomberra Creek. There are several minor drainage lines and erosion gullies

An assessment of the slope of the land on and surrounding the existing and proposed dwellings has been undertaken out to a distance of 100 metres from the proposed development footprint.

The effective slope' influencing fire behaviour approaching the sites has been assessed in accordance with the methodology specified within PBP.

The slopes are shown in Figure 6.

Figure 6 Vegetation and Slope



5.6.Asset Protection Zones

For new residential subdivision, a minimum separation distance should be provided in the form of Asset Protection Zones (**APZ**). The APZ is a fuel-reduced, physical separation between buildings and bush fire hazards.

For residential developments, APZ requirements are based on keeping radiant heat levels at buildings below 29kW/m2 as the maximum exposure on all sides of the building. As the proposal is not seeking new residential buildings, APZs have been shown around the indicative building footprints.

The grassland deeming provisions (see Section 5.4) provide an APZ of 20m around the buildings. The Australian Standard for Construction of Buildings in Bushfire Prone Areas (AS3959) provides APZs as per Table 2.

Table 2 Asset Protection Zones AS3959

Determination of Bushfire Attack Level FDI 100 (source AS3959 Table 2.4.2)		
Vegetation Classification	**Slope**	
	Upslope & Flat	**Downslope 0 – 5 degrees**
Grassland	BAL 29 = **9m**	BAL 29 = **10m**
Woodland	BAL 29 = **16m**	BAL 29 = **21m**

Figure 7 provides the APZ that encapsulate provisions for grassland, grassland deeming provisions and woodland.

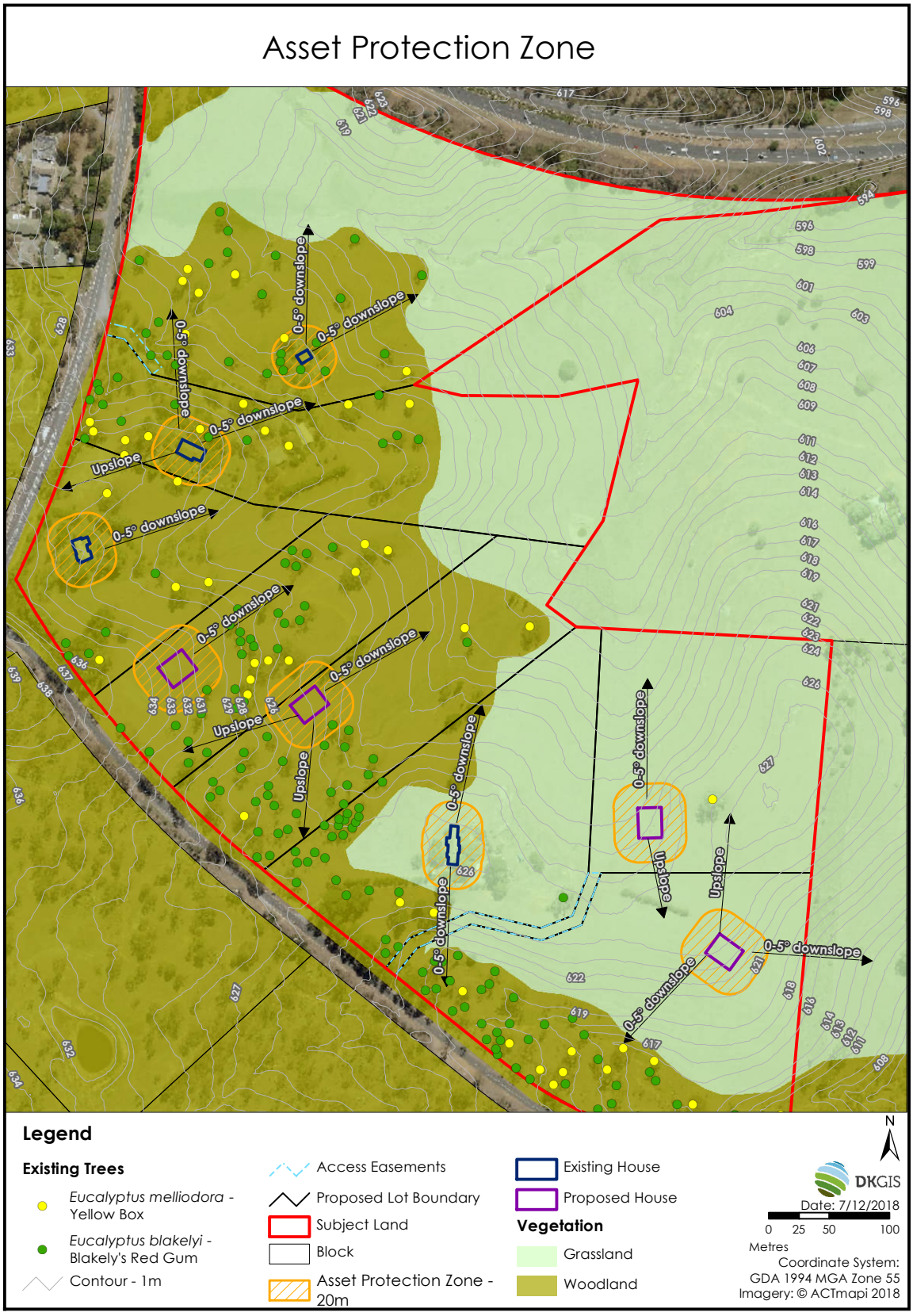
APZs can be provided within the site. The construction requirements for future residential dwellings will be determined during future development applications.

The requirements for an APZ are contained in Appendix 2. The APZ for each proposed Lot is shown in Appendix 3.

5.7. Tree Removal

Due to the existing management practices and ongoing rural management, the Site is considered to be currently managed to meet APZ Standards. The location of the trees within the site provides canopy separation and no tree removal is required around the existing dwellings or the proposed building footprints. See Figure 7 and Appendix 3 for detailed tree locations.

Figure 7 Asset Protection Zones



6. Construction Standards

No new dwellings are proposed as part of this application. The net effect of the proposed development will be a possible increase of four dwellings at some future stage, and provision for 3 horses per lease. Any additional dwellings beyond the existing four houses will be the subject of future (and separate) development approval by the Lessee(s).

The four existing dwellings will be retrofitted to BAL 12.5 to provide basic ember protection. This will not include changes to roofing or wall cladding (sarking). APZs will be provided to 20m which will not require tree removal.

7. Water Supplies

Any additional dwellings beyond the existing four houses will be the subject of future (and separate) development approval by the Lessee(s).

8. Gas and electrical supplies

Any additional dwellings beyond the existing four houses will be the subject of future (and separate) development approval by the Lessee(s).

9. Access

The site has multiple access points off Mugga lane and Narrabundah Lane servicing the existing 4 residential dwellings and paddocks. There is no access off Hindmarsh Drive. At present the property has eight (8) access points from adjacent roads.

A traffic impact assessment has been undertaken for the DA by Sellick Consultants and has concluded that the proposed development will not generate significant traffic flow to or from the site.

The existing and proposed road network provides good linkage and opportunities for heavy fire tanker access to the site.

10. Recommendations

The following recommendations are made for the bushfire protection measures for the site.

1. **Asset Protection Zones:** A 20m APZ is provided to the existing houses. APZ work will not include tree removal.

2. The **existing houses** will be upgraded to **BAL 12.5** to provide basic ember protection. Upgrades will include screens for windows and doors with a perforated mesh with a maximum aperture of 2mm, made of corrosion resistant steel or bronze or aluminum.

3. **Asset Protection Zones** for future dwellings of 20m from the building footprint.

11. Conclusion

The site has an area of approximately 37ha and is adjacent to Hindmarsh Drive, Mugga Lane and Narrabundah Lane. It is currently used as an agricultural property and contains four (4) dwellings. At present the property has eight (8) access points from adjacent roads.

The Site is bushfire prone. All of the understorey on the property has been heavily grazed over many years and includes large areas of introduced pasture.

The DA seeks a Crown lease variation for an 8 lot subdivision that could (if approved) permit another 4 residential dwellings on the subject site. Due to the existing management practices and ongoing rural management, the Site is considered to be currently managed to meet APZ Standards. The location of the trees within the site provides canopy separation and no tree removal is required around the existing dwellings or the proposed building footprints.

Recommendations have been provided to mitigate the impact of bushfires on the existing four houses.

Future applications will be lodged to determine construction requirements with AS3959.

The proposed rural subdivision meets bushfire planning requirements.

Lew Short | Principal

Blackash Bushfire Consulting

B.A., Grad. Dip. (Design for Bushfires), Grad. Cert. of Management (Macq), Grad. Cert. (Applied Management)

Fire Protection Association of Australia BPAD Level 3 BPD-PA 16373

Appendix 1 References

Councils of Standards Australia AS3959 (2009) – *Australian Standard Construction of buildings in bushfire-prone areas*

Councils of Standards Australia AS2419 (200) – *Fire Hydrant Installations*

Keith, David (2004) – *Ocean Shores to Desert Dunes – The Native Vegetation of New South Wales and the ACT*. The Department of Environment and Climate Change

NSW Rural Fire Service (2015) *Guide for Bushfire Prone Land Mapping*

NSW Rural Fire Service (2006). *Planning for Bushfire Protection: A Guide for Councils, Planners, Fire Authorities, Developers and Home Owners.* Australian Government Publishing Service, Canberra

NSW Rural Fire Service (2017). *Planning for Bushfire Protection: A Guide for Councils, Planners, Fire Authorities, Developers and Home Owners.* Draft for Public Exhibition

NSW Government (1979) *Environmental Planning and Assessment Act 1979*. NSW Government Printer

Appendix 2 Asset Protection Zone Requirements

An APZ is a buffer between a bushfire hazard and buildings which is managed to minimise fuel loads to reduce the spread of fire thereby reducing radiant heat, ember and flame attack.

The Standards[1] for APZs provides the required standard to be achieved in establishing and maintaining APZs.

The *Standards for APZs* require extensive modification of vegetation such that an area will not support a bushfire.

An APZ is a fuel reduced area surrounding a built asset or structure. An APZ provides:

- a buffer zone between a bushfire hazard and an asset;
- an area of reduced bushfire fuel that allows suppression of fire;
- an area from which backburning by fire fighters may be conducted; and
- an area which allows emergency services access and provides a relatively safe area for firefighters and home owners to defend their property.

Bushfire fuels are minimised within an APZ. This is so that the vegetation within the planned zone does not provide a path for the transfer of fire to the asset either from the ground level or through the tree canopy. If designed correctly and maintained regularly, the APZ will reduce the risk of:

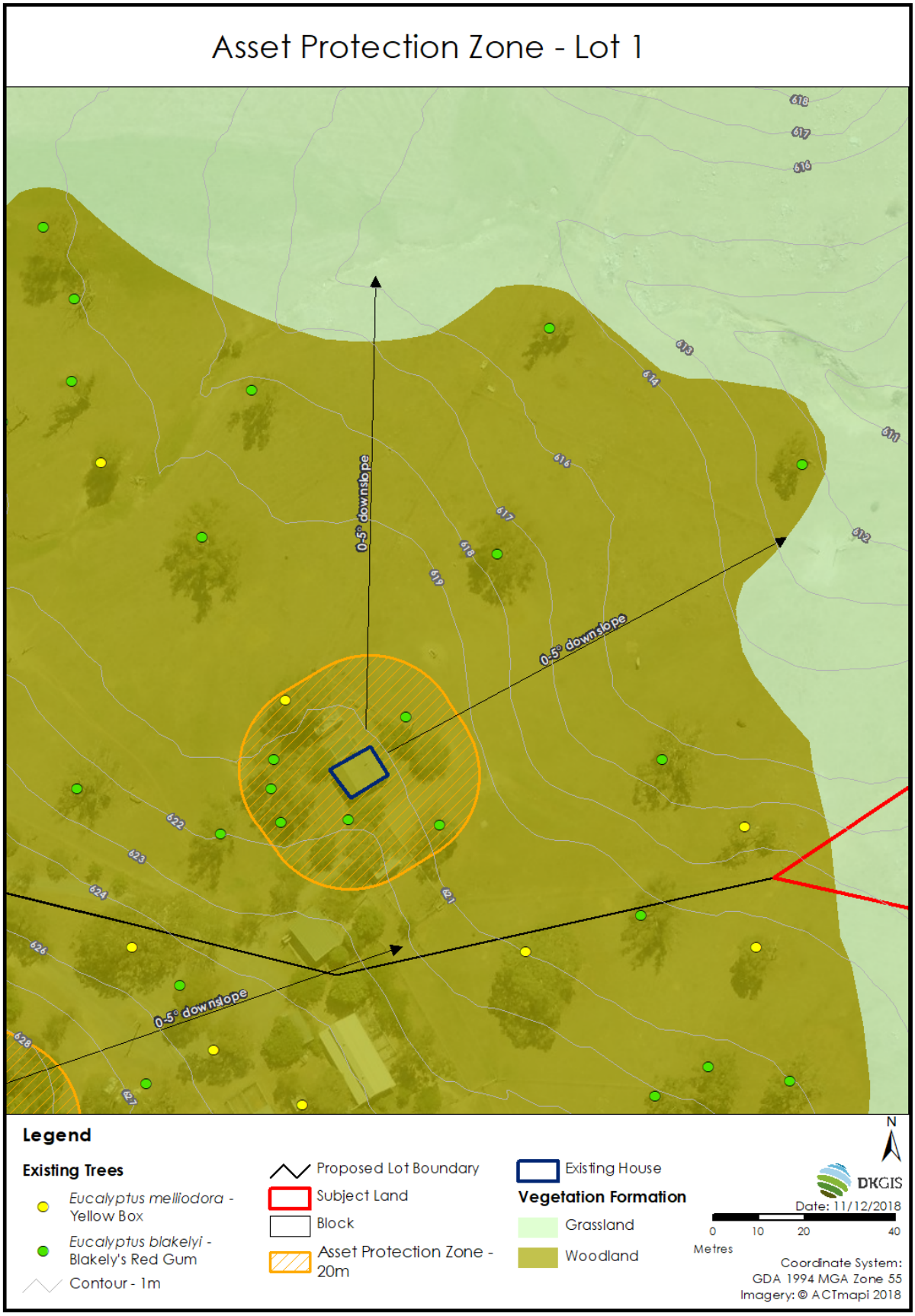
- direct flame contact on the asset;
- damage to the built asset from intense radiant heat; and
- ember attack on the asset.

The *Standards for APZ* requirements include:

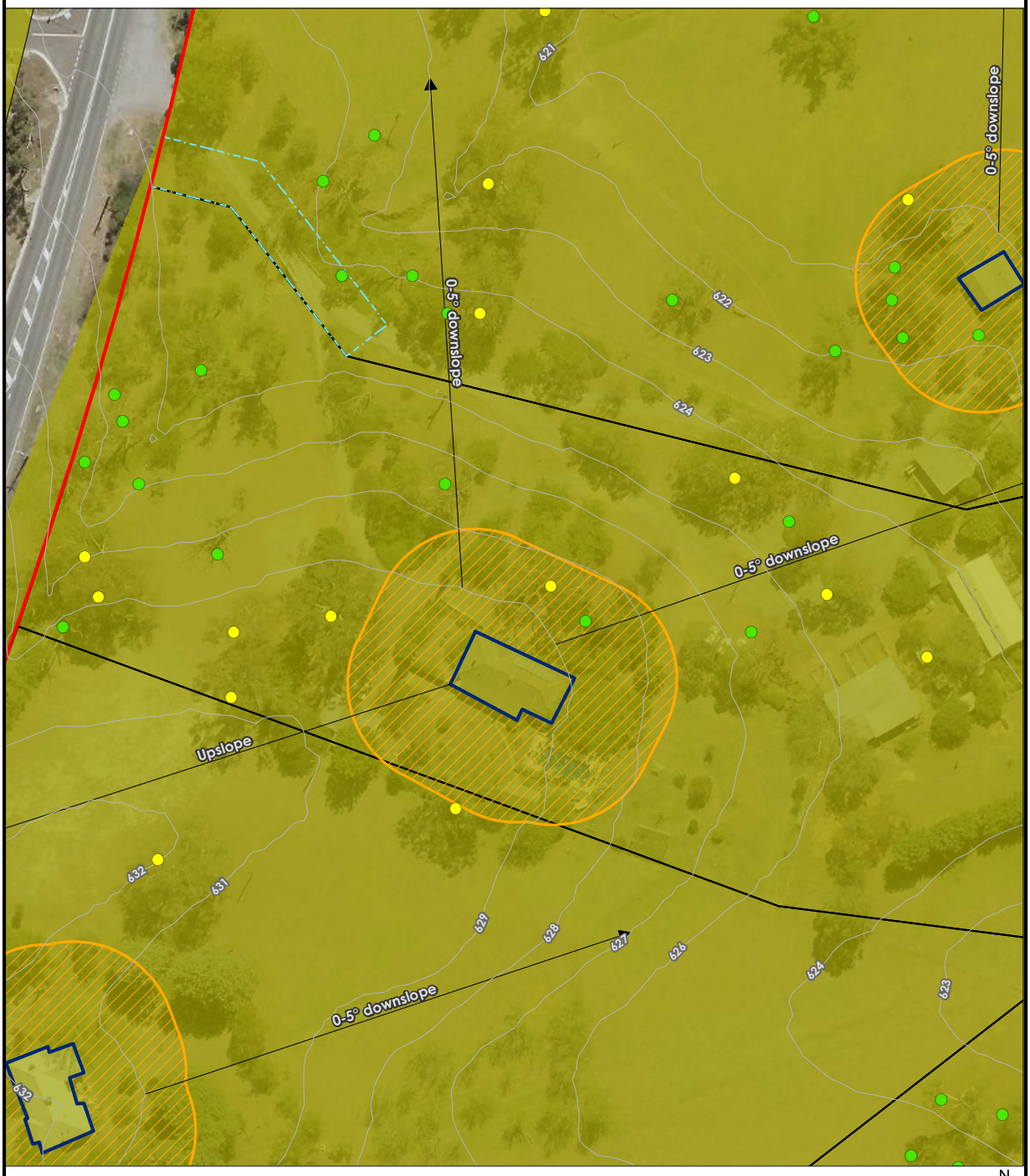
- *raking or manual removal of **fine fuels**. Ground fuels such as fallen leaves, twigs (less than 6 mm in diameter) and bark should be removed on a regular basis.*
- *mowing or grazing of grass. Grass needs to be kept short and, where possible, green.*
- ***removal** or pruning of trees, shrubs and understorey. The control of existing vegetation involves both selective fuel reduction (removal, thinning and pruning) and the retention of vegetation.*
- *prune or remove trees so that you do not have a continuous tree canopy leading from the hazard to the asset.*
- ***separate tree crowns by two to five metres**.*
- *a canopy should not overhang within two to five metres of a dwelling.*
- *native trees and shrubs should be retained as clumps or islands and should maintain a covering of no more than 20% of the area.*

[1] NSW RFS Standards for Asset Protection Zones

Appendix 3 Individual Lot APZs



Asset Protection Zone - Lot 2



Legend

Existing Trees

- *Eucalyptus melliodora* - Yellow Box
- *Eucalyptus blakelyi* - Blakely's Red Gum
- Contour - 1m
- Access Easements
- Proposed Lot Boundary
- Subject Land
- Block
- Asset Protection Zone - 20m
- Existing House

Vegetation Formation

- Woodland

N

DKGIS
Date: 11/12/2018

0 10 20 40
Metres

Coordinate System:
GDA 1994 MGA Zone 55
Imagery: © ACTmapi 2018

Asset Protection Zone - Lot 3

Legend

Existing Trees

- *Eucalyptus melliodora* - Yellow Box
- *Eucalyptus blakelyi* - Blakely's Red Gum
- Contour - 1m

- Proposed Lot Boundary
- Subject Land
- Block
- Asset Protection Zone - 20m

- Existing House
- Proposed House

Vegetation Formation

- Woodland

N

DKGIS
Date: 11/12/2018

0 10 20 40
Metres

Coordinate System:
GDA 1994 MGA Zone 55
Imagery: © ACTmapi 2018

Asset Protection Zone - Lot 4

Legend

Existing Trees

- *Eucalyptus melliodora* - Yellow Box
- *Eucalyptus blakelyi* - Blakely's Red Gum
- Contour - 1m
- Proposed Lot Boundary
- Subject Land
- Block
- Asset Protection Zone - 20m
- Existing House
- Proposed House

Vegetation Formation

- Woodland

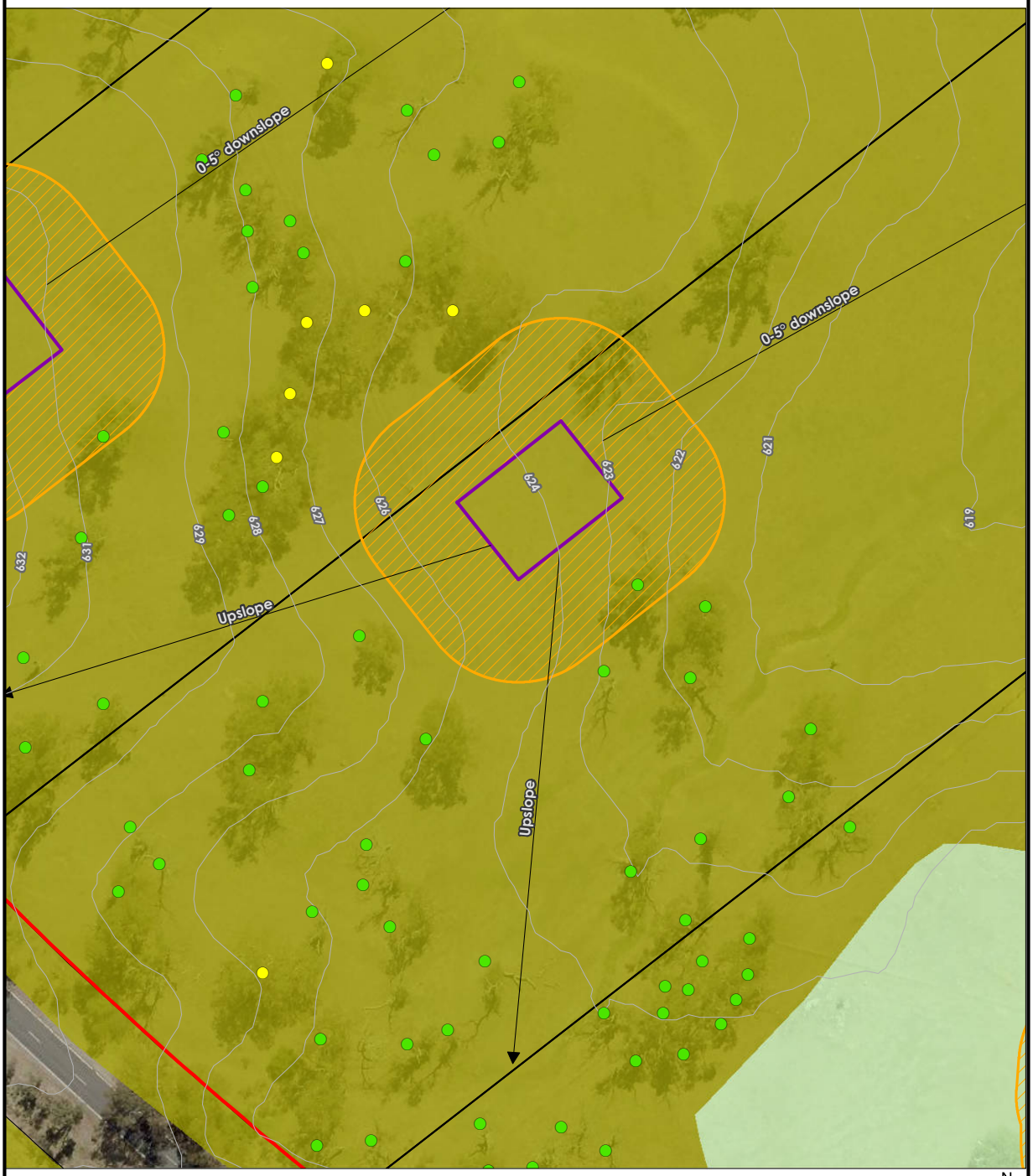
N

DKGIS
Date: 11/12/2018

0 10 20 40
Metres

Coordinate System:
GDA 1994 MGA Zone 55
Imagery: © ACTmapi 2018

Asset Protection Zone - Lot 5



Legend

Existing Trees

- *Eucalyptus melliodora* - Yellow Box
- *Eucalyptus blakelyi* - Blakely's Red Gum
- Contour - 1m
- Proposed Lot Boundary
- Subject Land
- Block
- Asset Protection Zone - 20m
- Proposed House

Vegetation Formation

- Grassland
- Woodland

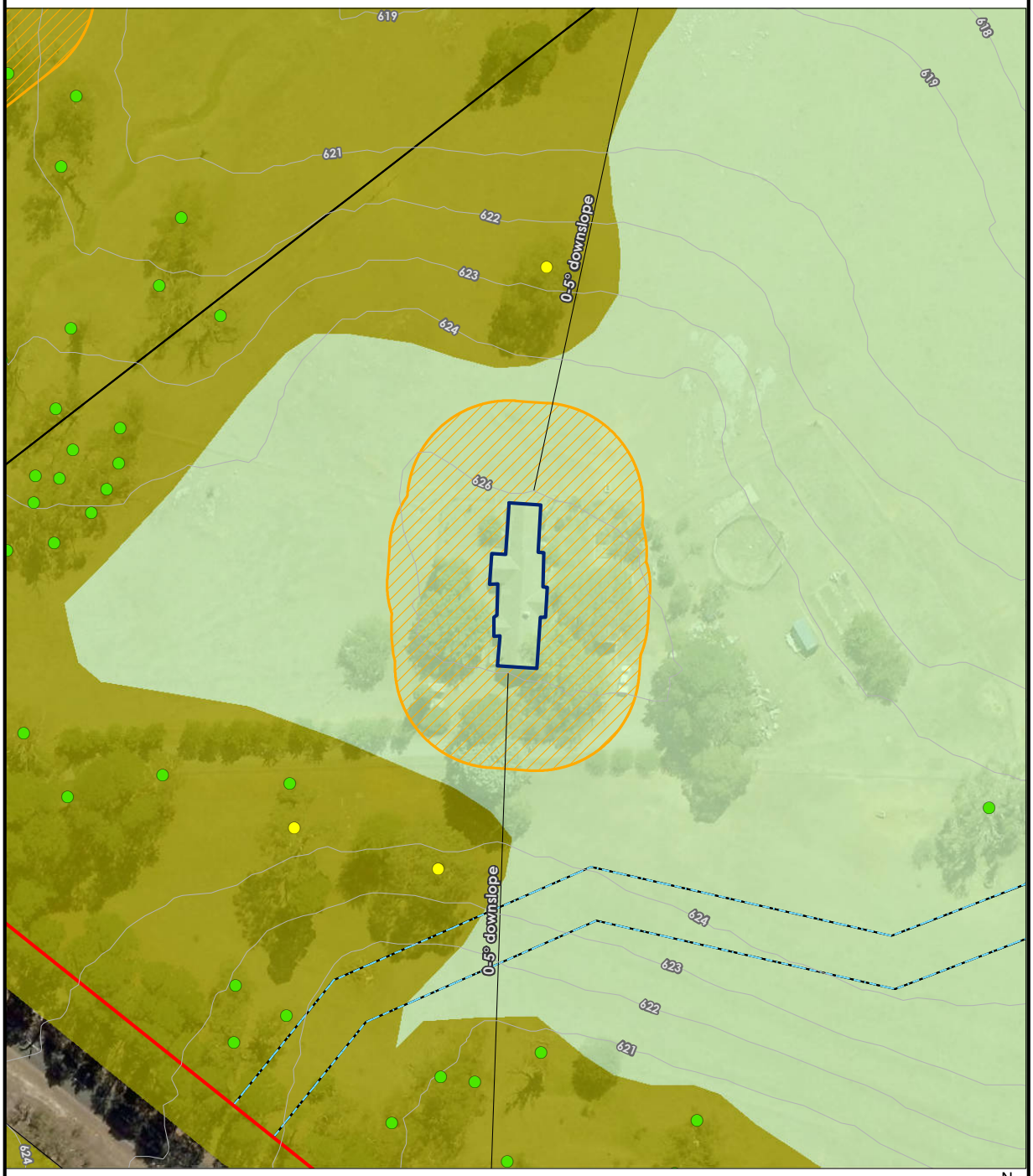
N

DKGIS
Date: 11/12/2018

0 10 20 40
Metres

Coordinate System:
GDA 1994 MGA Zone 55
Imagery: © ACTmapi 2018

Asset Protection Zone - Lot 6



Legend

Existing Trees

- *Eucalyptus melliodora* - Yellow Box
- *Eucalyptus blakelyi* - Blakely's Red Gum
- Contour - 1m
- Access Easements
- Proposed Lot Boundary
- Subject Land
- Block
- Asset Protection Zone - 20m
- Existing House

Vegetation Formation

- Grassland
- Woodland

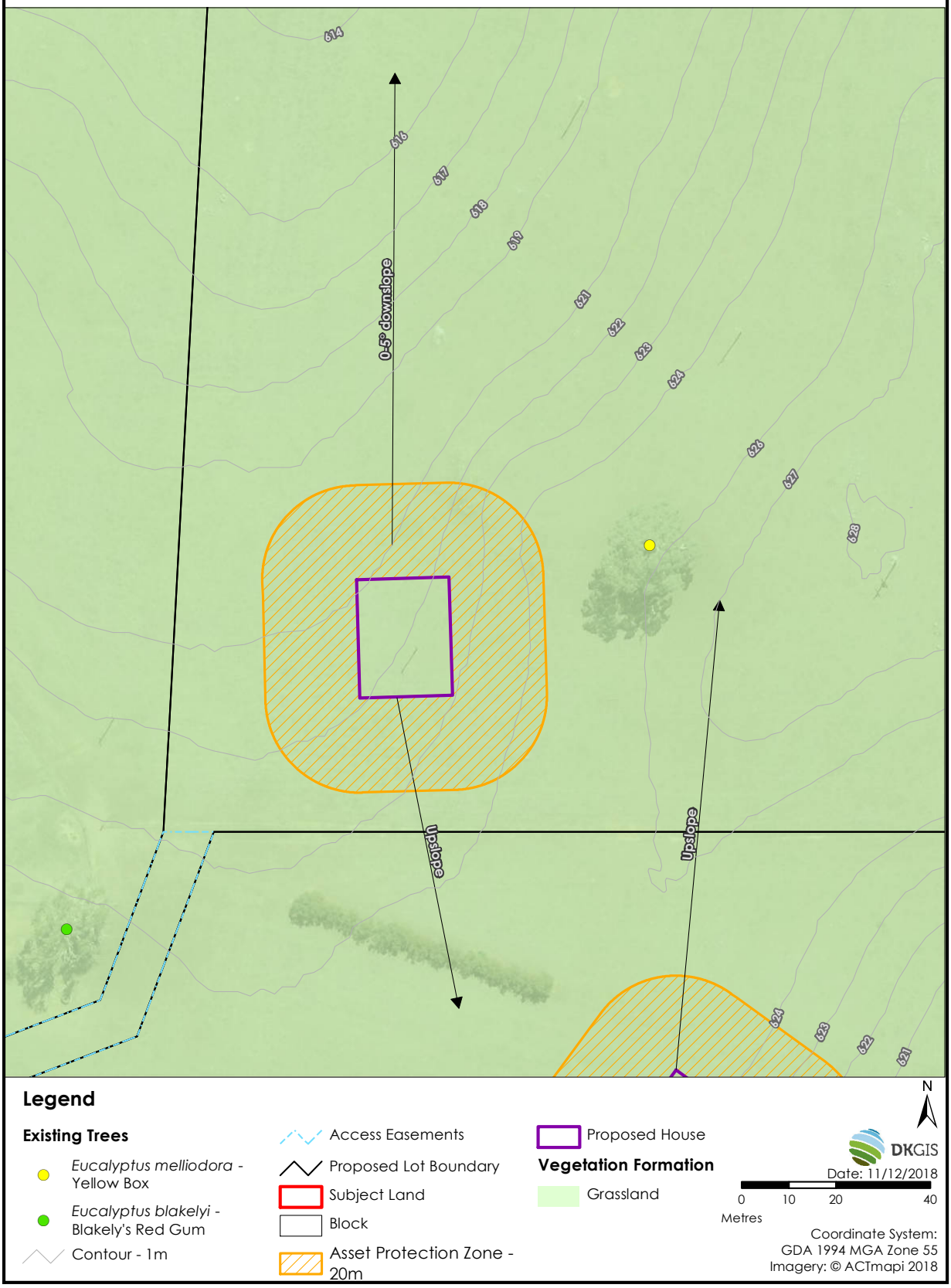
N

DKGIS
Date: 11/12/2018

0 10 20 40
Metres

Coordinate System:
GDA 1994 MGA Zone 55
Imagery: © ACTmapi 2018

Asset Protection Zone - Lot 7



Asset Protection Zone - Lot 8

Legend

Existing Trees

- *Eucalyptus melliodora* - Yellow Box
- *Eucalyptus blakelyi* - Blakely's Red Gum
- Contour - 1m
- Proposed Lot Boundary
- Subject Land
- Block
- Asset Protection Zone - 20m
- Proposed House

Vegetation Formation

- Grassland
- Woodland

N

DKGIS
Date: 11/12/2018

0 10 20 40
Metres

Coordinate System:
GDA 1994 MGA Zone 55
Imagery: © ACTmapi 2018

sellick consultants

5th December 2018

Purdon Planning Pty Ltd
Unit 4, Cooyong Centre
1 Torrens Street
BRADDON ACT 2612

Att: Rob Purdon

Re: 180494

SEDIMENT EROSION CONTROL STATEMENT
PROPOSED SUBDIVISION
BLOCK 5 SECTION 103 SYMONSTON

Sellick Consultants Pty Ltd on behalf of Purdon Planning Pty Ltd has prepared this Sediment Erosion Control Statement for the proposed subdivision of Block 5 Section 103 Symonston.

The site currently houses 4 residential dwellings. The development proposal consists of site subdivision that would permit the construction of up to a further 4 residential dwellings across a total of 8 proposed allotments – refer Purdon Planning Development Plan. It is noted that this development application does not include any residential dwelling proposals, just indicative building envelopes with indicative house sites.

The potential cumulative impact on sediment and erosion control by future construction of 4 dwellings under future development application/s has been considered as part of this assessment. From the subdivision of the development in question, the smaller blocks produced are expected to increase vegetation and land management. Providing the subdivision works and future residential construction works are carried out in accordance with requirements set out below, it is expected that the residential dwellings and associated landscaping and higher levels of land management, through more manageable smaller parcels of land, will have a long term positive impact on the sediment erosion properties of the site post development.

All works for this development and future residential dwelling construction are required to adhere to the *Environment Protection Guidelines for Construction and Land Development in the ACT*. In addition to complying with this document, the sediment erosion control measures implemented on site are also to adhere to the following;

- All erosion and sediment control measures are to be installed prior to the commencement of any work, including cutting and filling.
- All sediment control measures are to be constructed to prevent sediment from leaving the site or entering downstream properties, drainage lines or water courses.
- Limit the area of soil disturbance to the minimum required. Damage to the ground cover should be minimised and confined to the works site. Identify areas, including vegetated buffers, around the works site to preserve throughout the works period. Mark these areas as machinery exclusion zones on the ground and on the SECP. Ensure that the operators of earthmoving equipment are aware of the machinery exclusion zone(s).
- Keep groundcover along surface drainage areas and on steeper slopes. Where possible, retain significant areas of healthy grass down-slope of the works site, these strips can be highly effective for filtering out coarse sediment. The flatter and wider the strips are, the more effective they become.

- Vegetation along watercourses should be retained and protected from sediment by installing additional sediment control measures up-slope. Where riparian vegetation needs to be removed, leave it in place for as long as possible and stage earthworks to minimise the amount of site cleared at any time.
- Limit disturbance to existing watercourses. Existing crossings should be used to move equipment across a watercourse. If there is no crossing and a watercourse must be crossed, any disturbance should be minimised. If crossing once, the machinery should be carefully 'walked' across the watercourse. If crossing many times, a temporary crossing should be made by laying a pad of clean rock at a shallow point of the channel. The rock should be removed when works have finished.
- Ensure machinery is operated from the bank of the watercourse and not in the channel where practicable, to minimize impacts and to better enable mitigation of sedimentation.
- A sediment control fence must be installed at the downslope perimeter of the disturbed area to prevent sediment and other debris from leaving the site. Sediment fencing is to be trenched in at least 150mm and buried with the ends turned upslope.
- Where catchment area is more than 0.5ha direct up slope runoff around the site, by the use of a diversion bank or channels. These devices may require measures to control erosion depending on the volume of flow anticipated.
- Vehicular access is to be restricted to one stabilised access point which is to be constructed of 40mm crushed stone aggregate or recycled concrete 150mm deep, 2.5m wide and extend from the kerb line to the slab or building line or for at least 15m on rural allotments.
- Stockpiles of erodible materials (sand, soil, spoil and vegetation) must be protected by a sediment fence or bund around their lower edges. If the stockpile area is prone to high winds or is to be there for a long time, then the stockpile must be covered.
- Stockpiled material must be stored clear of any drainage line or watercourse and within the property boundary. NOTE: stockpiles are not permitted on footpaths or roads.
- All erosion and sediment control measures are to be regularly maintained in good working order at all times and inspected for adequacy following any rainfall event.
- During works, restrict stock access to the works site and watercourse to avoid additional erosion and resuspend materials. After works are complete, manage stock access to the area to avoid erosion and damage to the vegetation cover.
- All disturbed areas are to be made erosion resistant by revegetation (i.e. min 70% coverage), turfing or stabilised on completion of the works and prior to occupation.

Should you have queries pertaining to the above, please do not hesitate to contact me.

Yours faithfully,

Ross Costello
BEng (Hons) Civil
Graduate Civil Engineer
for Sellick Consultants Pty Ltd