



Googong Township, Googong, NSW – Planning Proposal

Biodiversity Development Assessment Report

Draft 01 - 2 April 2025

Prepared for Googong Township Pty Ltd

Document Information

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- Tim Corby – Development Manager, Peet Limited
- Liz Densley – Director, Eight Mile Planning

We acknowledge the Traditional Custodians of the land on which we work. We pay our respects to Elders past and present.

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Executive Summary

Googong Township Pty Ltd (GTPL) are progressing with a Planning Proposal to amend the *Queanbeyan-Palerang Regional Local Environmental Plan 2022*. The key aims of the Planning Proposal are to rezone portions of Googong Township so that they appropriately align with current and proposed future land uses, being either development or conservation. Capital Ecology Pty Ltd (Capital Ecology) has been commissioned by GTPL to complete the necessary biodiversity surveys and prepare this Biodiversity Development Assessment Report (BDAR) to identify and assess the significance of the impacts that the 'proposed development' would have on the biodiversity values of two parcels of land that are subject to the Planning Proposal (the 'subject land').

Scope

The development of the majority of Googong Township was subject to a Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) referral (EPBC Act Ref:2011/5859) and corresponding EPBC Act approval. With respect to the subject land for this BDAR, all areas were included in the EPBC Act referral. Any development of the subject land must therefore occur in accordance with the EPBC Act approval and associated conditions. Accordingly, although general biodiversity values are identified and considered, the primary purpose of this BDAR is to present the results of Capital Ecology's application of the NSW Biodiversity Assessment Method (BAM) (NSW Government 2020a¹) to assess the significance of the impacts of the proposed development on biota listed as threatened under the NSW *Biodiversity Conservation Act 2016* (BC Act).

Subject land and Proposed Rezoning

The subject land for this BDAR is 11.20 ha and is currently zoned 'C2 – Environmental Conservation' with a minimum lot size of 'AC = 80 ha'. As detailed in the Planning Proposal, the portions of the subject land proposed for future development are to be rezoned from C2 to either R1 General Residential or R5 Low Density Residential (termed the 'development footprint', 7.38 ha). The remaining areas will retain their C2 zoning and be incorporated into, and managed as part of, the adjacent 'Avoided Land' as identified in the Biodiversity Certification Assessment Report (BCAR) for Googong Township Neighbourhoods 3-5 (NH3-5).

Survey Overview

Vegetation and potential flora/fauna habitat were surveyed and mapped in accordance with the BAM. This involved the following ecological surveys undertaken by Capital Ecology on 20 December 2024.

- Plant Community Type and Vegetation Zone assessment and mapping.
- BAM plots.
- A tree habitat assessment.
- Threatened flora surveys via systematic transects and random meanders.

¹ NSW Government (2020a). *Biodiversity Assessment Method*. NSW Department of Environment, Climate Change and Water. Published October 2020

Results

Native vegetation

The PCTs that occur in the subject land, and their distribution within the subject land, were determined in accordance with the approved BCAR. The subject land was therefore determined to support the following two PCTs.

- PCT3375 – Monaro-Queanbeyan Rolling Hills Grassy Forest.
- PCT3376 – Southern Tableland Grassy Box Woodland.

The subject land has been substantially modified by its current and past land use, which has primarily been Merino sheep grazing with some cattle grazing in recent years. As a result, almost all of the original woody vegetation (canopy, midstorey, and shrubstorey) has been historically cleared across the subject land to promote pastoral productivity, with only four remnant trees remaining (one of which is dead). The prolonged period (at least several decades) of high intensity stock grazing has prevented regeneration of the overstorey and midstorey and depleted the native species diversity in the groundstorey. The resulting vegetation is therefore characterised by an almost absent canopy, an absent midstorey and shrubstorey, and a low diversity groundstorey dominated by disturbance tolerant native grasses and forbs.

Threatened ecological communities

PCT3376 is identified as potentially being the BC Act / EPBC Act critically endangered listed 'White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland' (Box-Gum Woodland) threatened ecological community (TEC). PCT3376 Zone 4 meets the listing criteria for this TEC under the BC Act, but does not meet the listing criteria under the EPBC Act. As such, the subject land supports 0.69 ha of low condition BC Act listed Box-Gum Woodland.

Threatened species

The historic activities which have occurred across the majority of the subject land have substantially degraded the habitat value for native flora and fauna. Targeted surveys did not record any species listed under the EPBC Act or the BC Act. The subject land is therefore considered unlikely to support habitat of significance for any of the threatened flora or threatened fauna species that have the potential to occur in the locality.

Impacts

Native vegetation

The proposed development will result in the following impacts.

- Clearance of 6.83 ha of PCT3375 Zone 4.
- Clearance of 0.44 ha of PCT3376 Zone 4 (low condition BC Act Box-Gum Woodland).

In total, the proposed development will clear 7.27 ha of BC Act native vegetation, which includes 0.44 ha of low condition BC Act Box-Gum Woodland. The proposed development will not result in any other direct impacts on native vegetation or flora/fauna habitat.

Assessment and Approval Requirements

Commonwealth EPBC Act

The proposed development is unlikely to have a significant impact on an EPBC Act listed MNES given the subject land does not:

- support any vegetation meeting the listing criteria of any EPBC Act listed threatened ecological communities; or
- support any EPBC Act listed flora species; or
- contain habitat of potential importance to EPBC Act listed threatened or migratory fauna species.

In addition, the development of the majority of Googong Township was subject to a Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) referral (EPBC Act Ref:2011/5859) and corresponding EPBC Act approval. With respect to the subject land for this BDAR, all areas were included in the EPBC Act referral. Any development of the subject land must therefore occur in accordance with the EPBC Act approval and associated conditions

In light of the above, EPBC Act referral as a standalone action is not required

NSW BC Act – Biodiversity offset credit calculations

None of the impacted vegetation zones have a vegetation integrity score sufficient for their clearance to result in generation of ecosystem credits, these being vegetation zones that have a vegetation integrity score of:

- a) ≥ 15 , where the PCT is representative of an EEC or a CEEC
- b) ≥ 17 , where the PCT is associated with threatened species habitat (as represented by ecosystem credits) or represents a vulnerable ecological community
- c) ≥ 20 , where the PCT does not represent a TEC and is not associated with threatened species habitat.

Accordingly, the proposed development does not generate an ecosystem credit obligation.

The subject land does not support habitat of potential significance to any species credit species.

Accordingly, the proposed development does not generate a species credit obligation.

NSW Biodiversity and Conservation SEPP 2021– Koala Habitat Protection Requirements

The *State Environmental Planning Policy (Biodiversity and Conservation) 2021* (the 'Biodiversity and Conservation SEPP 2021') commenced on 1 March 2022 consolidating and replacing eleven former SEPPs, including the former *State Environmental Planning Policy (Koala Habitat Protection) 2021*.

'Chapter 4 Koala habitat protection 2021' of the *Biodiversity and Conservation SEPP 2021* –

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

Whilst the development control provisions of Chapter 4 apply to the proposed development, the subject land does not constitute Koala habitat, and therefore Council can be satisfied that the proposed development is unlikely to have any impact on Koalas or Koala habitat and may grant consent to the development application.

1 Introduction

Googong Township Pty Ltd (GTPL) are progressing with a **Planning Proposal**² (Tim/Liz: please provide most up to date reference title.) to amend the *Queanbeyan-Palerang Regional Local Environmental Plan 2022*. The key aims of the Planning Proposal are to rezone portions of Googong Township so that they appropriately align with current and proposed future land uses, being either development or conservation. Capital Ecology Pty Ltd (Capital Ecology) has been commissioned by GTPL to complete the necessary biodiversity surveys and prepare this Biodiversity Development Assessment Report (BDAR) to identify and assess the significance of the impacts that the 'proposed development' would have on the biodiversity values of two parcels of land that are subject to the Planning Proposal (the 'subject land', Figure 1 and Figure 2).

The development of the majority of Googong Township was subject to a Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) referral (EPBC Act Ref:2011/5859) and corresponding EPBC Act approval. With respect to the subject land for this BDAR, all areas were included in the EPBC Act referral. Any development of the subject land must therefore occur in accordance with the EPBC Act approval and associated conditions.

Accordingly, although general biodiversity values are identified and considered, the primary purpose of this BDAR is to present the results of Capital Ecology's application of the NSW Biodiversity Assessment Method (BAM) (NSW Government 2020a³) to assess the significance of the impacts of the proposed development on biota listed as threatened under the NSW *Biodiversity Conservation Act 2016* (BC Act).

1.1 Background

Googong Township Neighbourhoods 3-5 (NH3-5) were previously assessed via Biodiversity Certification, the key informing document for which was the **Biodiversity Certification Assessment Report (BCAR)**⁴. As part of the Biodiversity Certification process, the assessment area associated with NH3-5 was designated as one of the following types of land (refer to Figure 3).

1. Land Proposed for Certification. This is land that is proposed for development. When land is biodiversity certified, development can occur without the need for biodiversity assessment under the BC Act for each constituent development application.
2. Avoided Land. This is land that supports substantial and/or significant biodiversity values. To be recognised as Avoided Land, conservation measures generally need to be applied to the land.
3. Retained Land not Proposed for Certification. This is land within the biodiversity certification assessment area that is neither designated as Land Proposed for Certification nor Avoided Land. Therefore, the usual development assessment and approval arrangements under the

² Eight Mile Planning (2024). *Planning Proposal. Googong Township – Eastern Boundary Alignment. For Submission to Queanbeyan-Palerang Regional Council. Date: 19 February 2024.*

³ NSW Government (2020a). *Biodiversity Assessment Method*. NSW Department of Environment, Climate Change and Water. Published October 2020

⁴ Capital Ecology (2021). *Googong Township – Neighbourhoods 3 to 5 – Biodiversity Certification Assessment Report*. Final 02 – October 2021. Prepared for Googong Township Pty Ltd. Authors: S. Reid & R. Speirs. Project no. 2820. Download [here](#).

Environmental Planning and Assessment Act 1979 (EP&A Act) and BC Act continue to apply to this land.

With regard to this BDAR, the subject land was identified in the BCAR as 'Retained Land not Proposed for Certification' (Figure 3). As such, these areas are neither certified nor subject to an approved conservation measure, and any future development of these areas require approval under the EP&A Act and BC Act.

1.2 Subject Land

The subject land for this BDAR is 11.20 ha. As shown in Figure 2 and Figure 3, the subject land is bordered by:

- future Googong NH3-5 to the north; and
- partially cleared, historic agricultural land to the south (now managed as 'Avoided Land' as per the BCAR).

Located in the Queanbeyan-Palerang Regional Council (QPRC) Local Government Area (LGA), pursuant to the *Queanbeyan-Palerang Regional Local Environmental Plan 2022*, the subject land is currently zoned⁵ 'C2 – Environmental Conservation' with a minimum lot size⁶ of 'AC = 80 ha'.

The topography across the subject land is sloping, with elevation ranging from approximately 775 m Australian Height Datum (AHD) along the western boundary down to 745 m along the eastern boundary.

There are no dams or drainage lines / streams in the subject land.

1.3 Proposed Rezoning

As detailed in the Planning Proposal, the portions of the subject land proposed for future development are to be rezoned from C2 to either R1 General Residential or R5 Low Density Residential (termed the 'development footprint', 7.38 ha, Figure 2). The remaining areas will retain their C2 zoning and be incorporated into, and managed as part of, the adjacent 'Avoided Land' as identified in the BCAR (refer to Figure 2 and Figure 3).

1.4 Commonwealth and State Assessment and Approval Processes

1.4.1 Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*

The EPBC Act is the key Commonwealth Government legislation for the protection and conservation of Australia's environment and biodiversity. The EPBC Act provides the legislative framework for the assessment and approval mechanism requiring that proposed 'actions' to be assessed in terms of their potential to impact upon 'Matters of National Environmental Significance' (MNES).

The development of the majority of Googong Township was subject to a Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) referral (EPBC Act Ref:2011/5859) and corresponding EPBC Act approval. With respect to the subject land for this BDAR, all areas were included in the EPBC Act referral. Any development of the subject land must therefore occur in accordance with the EPBC Act approval and associated conditions.

⁵ Queanbeyan-Palerang Regional Local Environmental Plan 2022: *Land Zoning Map - Sheet LZN_001E*

⁶ Queanbeyan-Palerang Regional Local Environmental Plan 2022: *Lot Size Map - Sheet LSZ_001E*

1.4.2 NSW Biodiversity Conservation Act 2016

The NSW *Biodiversity Conservation Act 2016* (BC Act) commenced on 25 August 2017, the purpose of which is –

to maintain a healthy, productive and resilient environment for the greatest well-being of the community, now and into the future, consistent with the principles of ecologically sustainable development (BC Act Part 1, Section 1.3).

The BC Act outlines the NSW framework for addressing impacts on biodiversity from development and clearing. Supported by the NSW *Biodiversity Conservation Regulation 2017* (BC Regulation), the BC Act establishes a framework to avoid, minimise and offset impacts on biodiversity from development through the Biodiversity Offsets Scheme (BOS).

1.4.2.1 NSW Biodiversity Offset Scheme

The BOS creates a transparent, consistent, and scientifically based approach to biodiversity assessment and offsetting for all types of development that are likely to have a significant impact on biodiversity. The BOS aims to ensure a no-net-loss outcome for biodiversity by applying a framework which requires that impacts are first avoided and minimised, and where this cannot be fully achieved, residual impacts must be offset. The BOS also establishes Biodiversity Stewardship Agreements (BSAs), which are voluntary in-perpetuity agreements entered into by landholders, to secure and manage offset sites for biodiversity conservation. The two key elements of the BOS are as follows.

1. A developer, landholder etc. who undertakes an activity (i.e. development, clearing, other impact) which generates a credit obligation must retire the necessary credits to offset their activity.
2. A landholder who establishes a biodiversity stewardship site on their land generates credits which may be sold to developers or landholders who require those credits to offset their credit obligation.

Under the BC Act, the BOS is triggered for proposed development or clearing which:

- will involve clearance of native vegetation (including trees, understorey plants, groundcover plants, and wetland plants) or a prescribed impact (as set out in clause 6.1 of the BC Regulation) on land identified on the Biodiversity Values Map; and/or
- will exceed the native vegetation clearance threshold for the smallest minimum lot size associated with the subject land; and/or
- may significantly impact one or more BC Act listed entities (i.e. threatened species or ecological communities).

1.4.2.2 NSW Biodiversity Assessment Method

The NSW Biodiversity Assessment Method (BAM) is the assessment manual that outlines how an accredited person (i.e. a BAM Assessor) assesses impacts on biodiversity at development sites or assesses the biodiversity values of stewardship sites. The BAM is a scientific document that provides:

- a consistent (standard) method for the assessment of the biodiversity values of a proposed development site, major project site, or vegetation clearing site, or stewardship site;

- guidance on how a proponent (i.e. developer, landholder) can avoid and/or minimise potential biodiversity impacts, or assessment of the management requirements at a proposed biodiversity stewardship site and the likely improvement in biodiversity values that are predicted to occur over time; and
- the number and class of biodiversity credits that need to be offset to achieve a standard of 'no net loss' of biodiversity values for a development site, or the number and class of biodiversity credits to be generated by a proposed stewardship site.

The BAM is supported by the online BAM Calculator, into which a BAM Assessor enters the data from desktop and field investigations to determine the number and class of biodiversity credits generated:

- as an obligation for development/clearance, this obligation must be addressed by the proponent to secure approval for the development/clearance; or
- by the establishment and management of a biodiversity stewardship site, these credits being a commodity that may be sold.

The BAM determines the following two types of credits on both development/clearance sites and stewardship sites.

- Ecosystem credits, these are credits generated for impacts on, or conservation of:
 - threatened ecological communities; and
 - threatened species habitat for species that can be reliably predicted to occur within a given plant community type (PCT) (referred to in the BAM as 'ecosystem credit species').
- Species credits, these are credits generated for impacts on, or conservation of, individuals and/or the habitat of threatened species which cannot be reliably predicted to occur in a given PCT (referred to in the BAM as 'species credit species').

The BAM Assessor documents the results of the biodiversity assessment in a Biodiversity Assessment Report (BAR), of which there are the following three types.

- Biodiversity Development Assessment Report (BDAR). A BDAR is developed to assess the likely biodiversity impacts of a development or vegetation clearing proposal.
- Biodiversity Certification Assessment Report (BCAR). A BCAR is developed to assess the likely biodiversity impacts of conferring biodiversity certification over a specific area of land.
- Biodiversity Stewardship Site Assessment Report (BSSAR). A BSSAR is developed to assess the likely biodiversity conservation gain of establishing a specific area of land as a biodiversity stewardship site under a formal Biodiversity Stewardship Agreement.

1.4.3 NSW State Environmental Planning Policy (Biodiversity and Conservation) 2021 – Chapter 4 Koala habitat protection 2021

State Environmental Planning Policies (SEPPs) outline policy objectives relevant to state-wide issues. The *State Environmental Planning Policy (Biodiversity and Conservation) 2021* (the 'Biodiversity and Conservation SEPP 2021') commenced on 1 March 2022 consolidating and replacing eleven former SEPPs, including the *State Environmental Planning Policy (Koala Habitat Protection) 2021*.

The subject land is in the QPRC LGA and is zoned 'C2 – Environmental Conservation'. As such, the Koala Habitat Protection 2021 applies.

'Chapter 4 Koala habitat protection 2021' of the *Biodiversity and Conservation SEPP 2021* –

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

On land zoning and tenure located in LGAs to which Chapter 4 applies (listed in Schedule 4):

- A. on land to which an approved koala plan of management applies, the council's determination of the development application must be consistent with the approved koala plan of management that applies to the land; or
- B. on land to which no approved koala plan of management applies, and the land has an area of at least 1 hectare (including adjoining land within the same ownership), before a council may grant consent to a development application for consent to carry out development on the land, the council must assess whether the development is likely to have any impact on koalas or koala habitat.

As there is no approved Koala plan of management and the subject land has an area of at least 1 hectare, Scenario B of the Koala Habitat Protection 2021 applies.

Where Scenario B applies –

(3) If the council is satisfied that the development is likely to have low or no impact on koalas or koala habitat, the council may grant consent to the development application.

(4) If the council is satisfied that the development is likely to have a higher level of impact on koalas or koala habitat, the council must, in deciding whether to grant consent to the development application, take into account a koala assessment report for the development.

(5) However, despite subsections (3) and (4), the council may grant development consent if the applicant provides to the council—

(a) information, prepared by a suitably qualified and experienced person, the council is satisfied demonstrates that the land subject of the development application—

(i) does not include any trees belonging to the koala use tree species listed in Schedule 3 for the relevant koala management area, or

(ii) is not core koala habitat, or

(b) information the council is satisfied demonstrates that the land subject of the development application—

(i) does not include any trees with a diameter at breast height over bark of more than 10 centimetres, or

(ii) includes only horticultural or agricultural plantations.

The *Biodiversity and Conservation SEPP 2021* applies in addition to any assessments required under the EPBC Act or the BC Act (i.e. BAM assessment).

1.5 Biodiversity Development Assessment Report

As prescribed under Part 6, Division 3, Section 6.12 of the BC Act, a BDAR is –

a report prepared by an accredited person in relation to proposed development or activity that would be authorised by a planning approval, or proposed clearing that would be authorised by a vegetation clearing approval, that:

(a) assesses in accordance with the biodiversity assessment method the biodiversity values of the land subject to the proposed development, activity or clearing, and

(b) assesses in accordance with that method the impact of proposed development, activity or clearing on the biodiversity values of that land, and

(c) sets out the measures that the proponent of the proposed development, activity or clearing proposes to take to avoid or minimise the impact of the proposed development, activity or clearing, and

(d) specifies in accordance with that method the number and class of biodiversity credits that are required to be retired to offset the residual impacts on biodiversity values of the actions to which the biodiversity offsets scheme applies.

A BDAR prepared applying the BAM by an accredited BAM Assessor must accompany any development application for which the BOS is triggered. As detailed previously, the BOS is triggered for a proposed development which:

- will involve clearance of native vegetation (including trees, understorey plants, groundcover plants, and wetland plants) or a prescribed impact (as set out in clause 6.1 of the BC Regulation) on land identified on the Biodiversity Values Map; and/or
- will exceed the native vegetation clearance threshold for the smallest minimum lot size associated with the subject land; and/or
- may significantly impact one or more BC Act listed entities (i.e. threatened species or ecological communities).

With regard to the above, the minimum lot size designation for the subject land is 'AC = 80 ha'. Therefore, in accordance with Part 7, Clause 7.2 of the BC Regulation, if the BC Act 'native vegetation' (defined in Part 5A of the *Local Land Services Act 2013* as plant species indigenous to NSW) clearance exceeds 1 ha (10,000 m²) in total, then the BOS is triggered.

As the proposed development would involve the clearance of 7.27 ha of BC Act 'native vegetation' (defined in Part 5A of the *Local Land Services Act 2013* as plant species indigenous to NSW), the BOS is triggered and a BDAR is required.

The BAM provides a standard method for assessing the impacts of a development/clearance proposal. This theme should carry over to the resulting BDAR such that it is as concise as possible whilst still addressing all of the relevant elements of the BAM in order to provide a complete assessment of the proposal.

1.5.1 Objectives and format

Developed to reflect the format of the BAM, this BDAR comprises the following two broad parts.

- Part 1 – Biodiversity Assessment (BAM Stage 1), includes assessment of the:
 - landscape context;
 - native vegetation, threatened ecological communities (TECs), vegetation integrity; and
 - habitat suitability for threatened species.
- Part 2 – Impact Assessment (BAM Stage 2), details the:
 - proposed measures to avoid, minimise and mitigate biodiversity impacts;
 - residual impacts (direct and indirect) of the proposed development; and
 - offset requirements relevant to the proposed development.

1.5.2 Technical resources and qualifications

This BDAR has been prepared by the following technical personnel.

- Robert Speirs – Director / Principal Ecologist

BAppSc (Ecology), DipPM, MEIANZ, CEnvP-E, Accredited BAM Assessor (No: BAAS17089)
Robert was project director for this assessment and closely supervised all field surveys, data entry, GIS mapping, BAM credit calculations, and report preparation.
- Dr Sam Reid – Senior Ecologist

BSc (Hons), PhD, Accredited BAM Assessor (No: BAAS20006)
Sam was project manager for this assessment and undertook field surveys, data analysis, GIS mapping, BAM credit calculations, and report preparation.
- Lachlan Anderson – Field Ecologist

BSc
Lachlan undertook field surveys.

All surveys for this assessment were undertaken in accordance with the following.

- Capital Ecology's (Robert Speirs – Principal Investigator) Animal Research Authority (ARA) granted under the NSW *Animal Research Act 1985* by the NSW Department of Primary Industries Secretary's Animal Care and Ethics Committee (CSB 15/2046).
- Capital Ecology's NSW Scientific Licence issued by the NSW Department of Planning and Environment under Part 2 of the NSW *Biodiversity Conservation Act 2016* (SL101623).

1.5.3 Certification under clause 6.15 of the Biodiversity Conservation Act 2016

I certify that this report has been prepared based on the requirements of, and information provided under, the NSW Biodiversity Assessment Method 2020 and clause 6.15 of the NSW *Biodiversity Conservation Act 2016*.

Name: Samuel Reid

Signature: Sam Reid

Date: 2 April 2025

BAM Assessor Accreditation no: BAAS20006

1.5.4 Conflict of interest declaration

I declare that I have considered the circumstances and there is no actual, perceived, or potential conflict of interest.

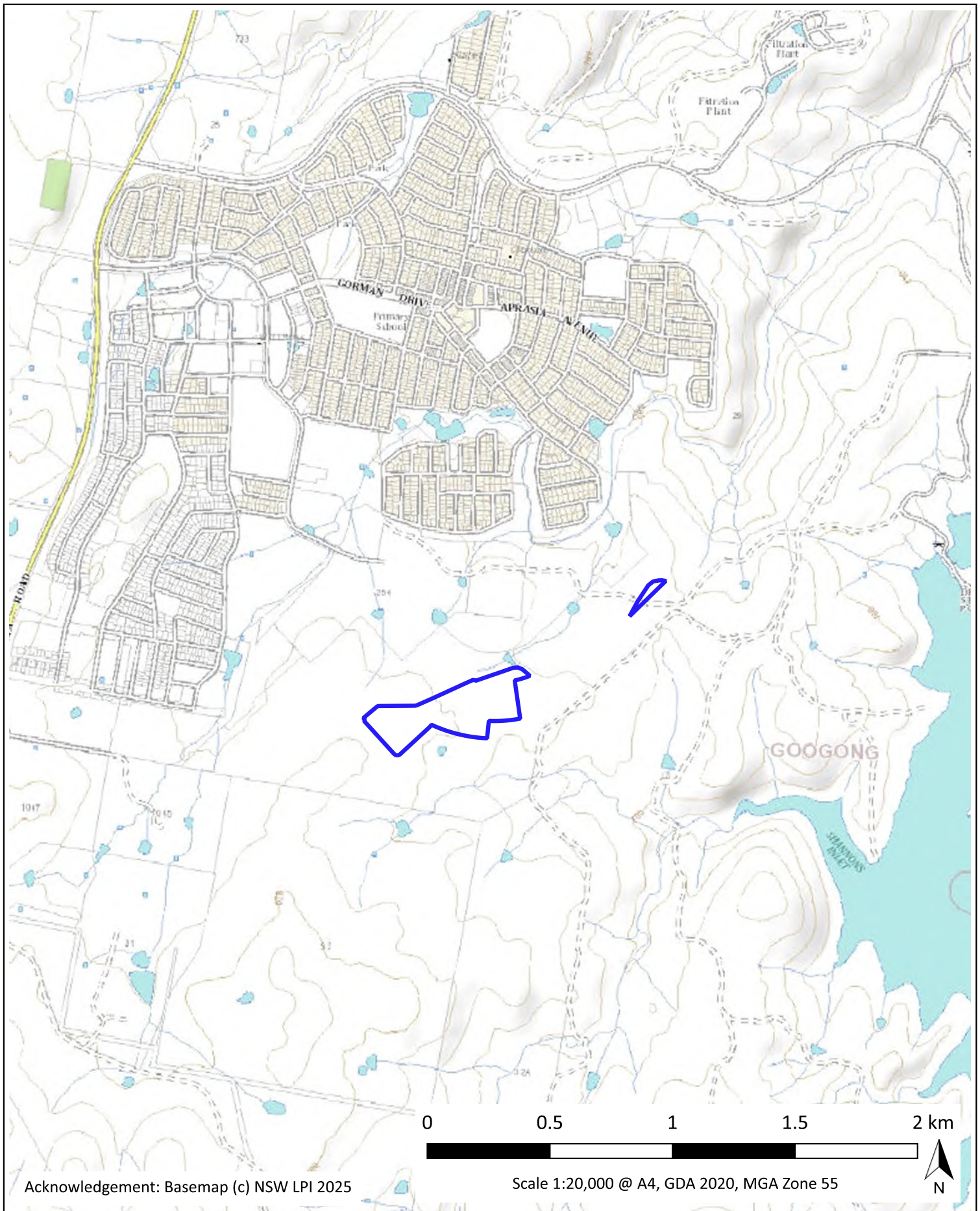
This declaration has been made in the interests of full disclosure to the decision-maker. Full disclosure has also been provided to the client.

Name: Samuel Reid

Signature: Sam Reid

Date: 2 April 2025

BAM Assessor Accreditation no: BAAS20006



Acknowledgement: Basemap (c) NSW LPI 2025

Scale 1:20,000 @ A4, GDA 2020, MGA Zone 55

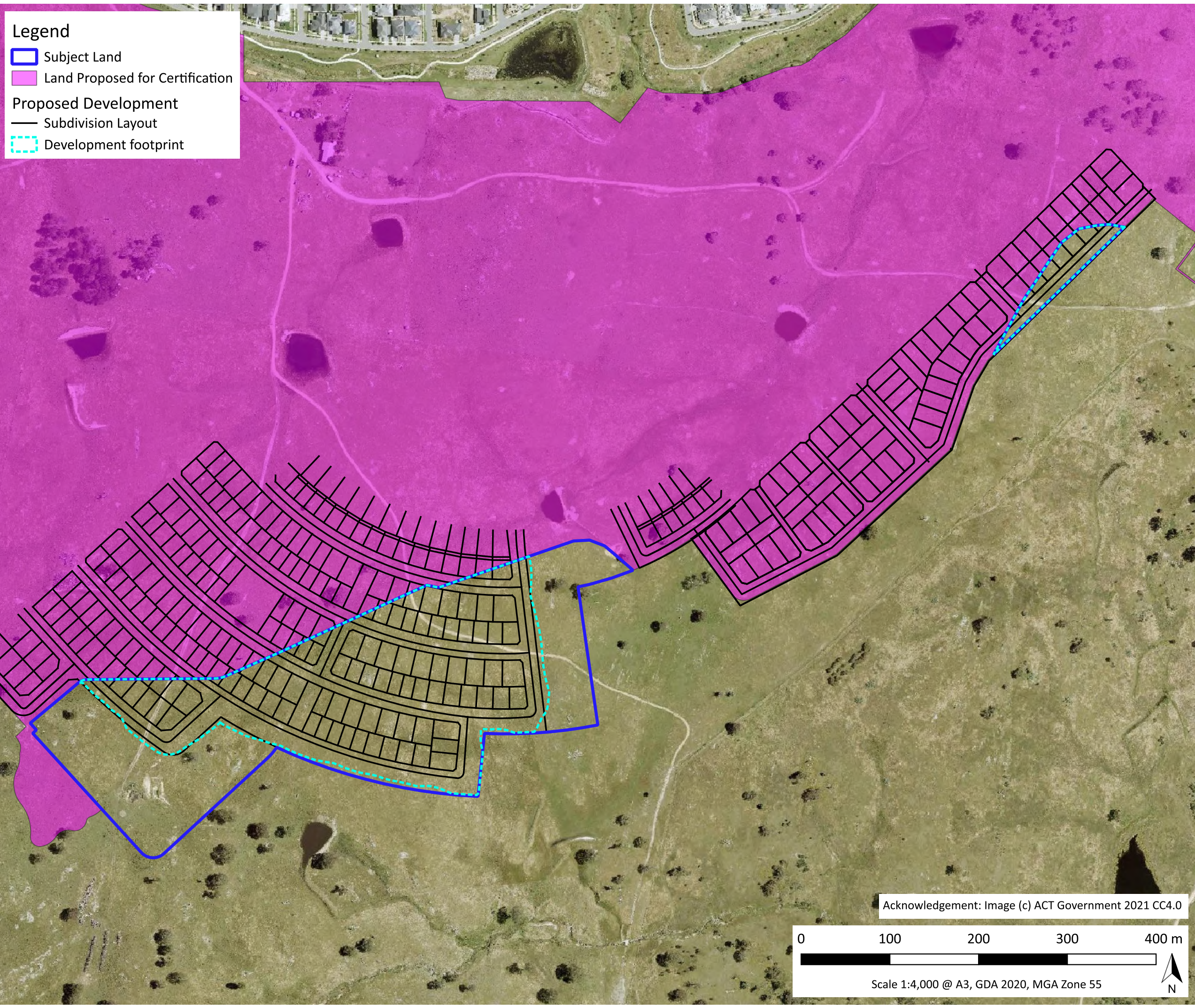
Figure 1. Locality Plan

Legend

 Subject Land

Capital Ecology Project No: 3365
 Drawn by: S. Reid
 Date: 2 April 2025





Legend

Subject Land

Land Proposed for Certification

Proposed Development

Subdivision Layout

Development footprint

Figure 2. The Subject Land and Proposed Development on Aerial Imagery

Capital Ecology Project No: 3365
Drawn by: S. Reid
Date: 2 April 2025

Acknowledgement: Image (c) ACT Government 2021 CC4.0

0 100 200 300 400 m

Scale 1:4,000 @ A3, GDA 2020, MGA Zone 55

N



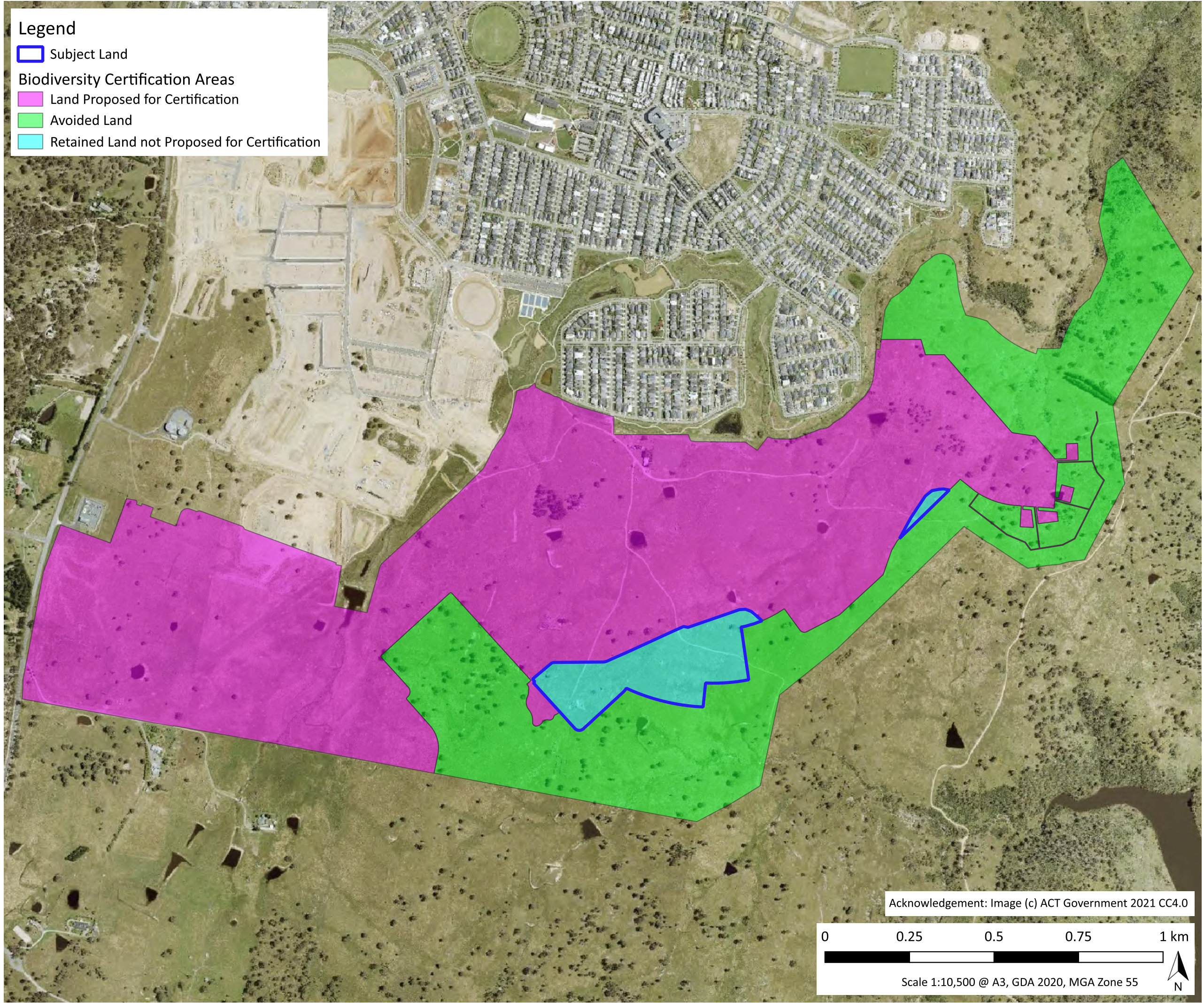
Legend

Subject Land

Biodiversity Certification Areas

Land Proposed for Certification
 Avoided Land
 Retained Land not Proposed for Certification

Figure 3. Biodiversity Certification Areas



Capital Ecology Project No: 3365
 Drawn by: S. Reid
 Date: 2 April 2025

Acknowledgement: Image (c) ACT Government 2021 CC4.0



2 Part 1 – Biodiversity Assessment (BAM Stage 1)

Part 1 of this BDAR provides an assessment of the biodiversity values of the subject land as set out in Stage 1 of the BAM.

2.1 Landscape Context

As detailed in the BAM, a range of landscape features must be identified where they occur in the subject land or within the assessment area surrounding the subject land. These features may contain/support biodiversity values that are important for the site context of the subject land, or for informing the likely habitat suitability of the subject land. Table 1 outlines the landscape features and overall landscape context of relevance to the subject land.

Table 1. Landscape features.

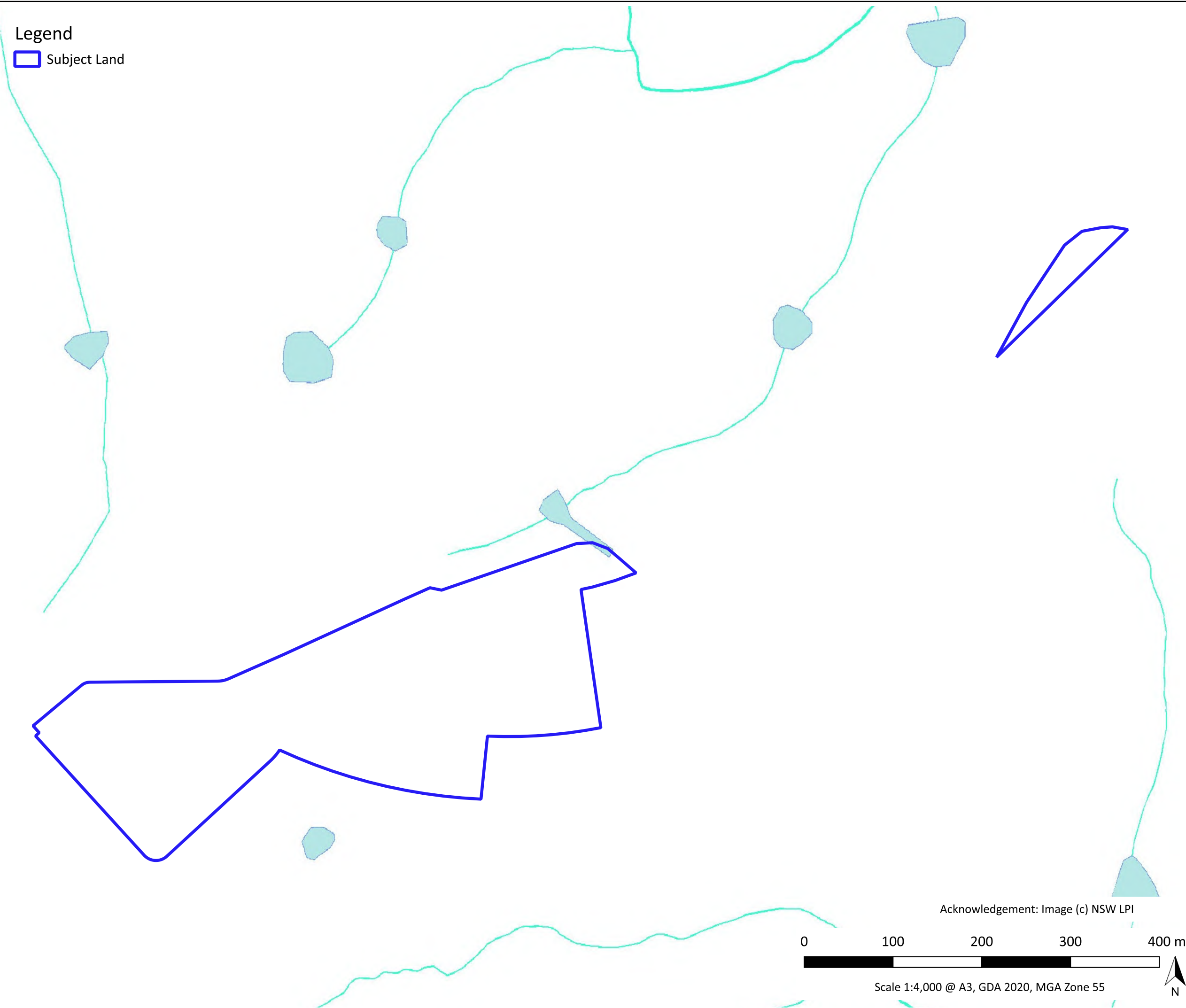
Landscape Feature	Description	Figure Reference
IBRA bioregion	The subject land occurs in the South Eastern Highlands IBRA bioregion.	-
IBRA subregion	The subject land is located in the Monaro IBRA subregion.	-
BioNet NSW landscapes (Mitchell landscapes)	The subject land contains one Mitchell Landscape: Molonglo Ranges .	-
Rivers, streams and estuaries (Strahler ⁷ stream order)	There are no dams or drainage lines / streams in the subject land	Figure 2 Figure 4
Wetlands (important wetlands)	The subject land does not contain any important wetlands as listed in the Directory of Important Wetlands in Australia (DIWA) or coastal wetlands protected under <i>State Environmental Planning Policy No 14</i> .	-
Connectivity	The subject land has been substantially modified by its current and past land use, which has primarily been Merino sheep grazing with some cattle grazing in recent years. Almost all of the original woody vegetation (canopy, midstorey, and shrubstorey) was historically cleared across the subject land to promote pastoral productivity, with only three remnant trees and one stag remaining. The high intensity stock grazing has prevented regeneration of the overstorey and midstorey and depleted the native species diversity in the groundstorey. The resulting vegetation across the subject land is therefore characterised by an absent or low-density canopy of mature remnant eucalypts, an absent midstorey and shrubstorey, and a low diversity groundstorey dominated by disturbance tolerant native grasses. In light of the above, whilst the mature remnant trees and native grass dominated groundstorey are likely to be of some habitat value to native birds and other highly mobile fauna species, they are unlikely to constitute or comprise part of an important biodiversity corridor or other notable habitat connectivity feature.	Figure 5 Figure 6

⁷ Strahler, AN (1952). *Hypsometric (area-altitude) analysis of erosional topology*. Geological Society of America Bulletin 63 (11): 1117–1142.

Landscape Feature	Description	Figure Reference
Areas of geological significance and soil hazard	The subject land does not contain/support any karst, caves, crevices, cliffs, or other areas/features of geological significance. There are no hazard soil features.	-
Areas of outstanding biodiversity value	The subject land does not support or occur near any declared area of outstanding biodiversity value (AOBV).	-
Percent native vegetation cover (buffer area)	A 1,500 m buffer was applied to the subject land resulting in an overall buffer area of 1,156 ha. This buffer area contains only woody PCTs (i.e. woodland, dry sclerophyll forest). Accordingly, the following two categories of native vegetation were defined to identify the total area of native vegetation in the buffer. 1. Woody vegetation – The areas which have a woody PCT and retain remnant woody vegetation or woody regrowth. 2. Non-woody vegetation – The areas which have a woody PCT from which the woody vegetation has been cleared, yet at least a substantial proportionate cover (i.e. > 35%) of native groundstorey species remains (often referred to as derived or secondary grassland). Native vegetation cover was first identified and mapped via interpretation of the available aerial imagery (ACT Government aerial imagery and NSW LPI). The presence of remnant canopy trees, cultivation patterns in paddocks, abnormally green and/or uniform groundstorey vegetation etc., were important factors considered during aerial interpretation. Field reconnaissance was then undertaken to ground truth and refine the mapping where possible. This field reconnaissance involved driving the publicly accessible roads within the buffer area and making observations across paddocks etc. from the roadside. 1. Woody vegetation cover – 505 ha (44%) of the buffer area was determined to support native woody vegetation cover. 2. Non-woody vegetation cover – 313 ha (27%) of the buffer area was determined to support native non-woody vegetation cover. ↓ Total native vegetation cover – the total area of native vegetation cover in the buffer area is 818 ha (71%). This falls into the >70% cover class in the BAM Calculator.	Figure 5

Figure 4. Hydrology

Legend
Subject Land



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Drawn by: S. Reid
Date: 2 April 2025

Acknowledgement: Image (c) NSW LPI



Scale 1:4,000 @ A3, GDA 2020, MGA Zone 55



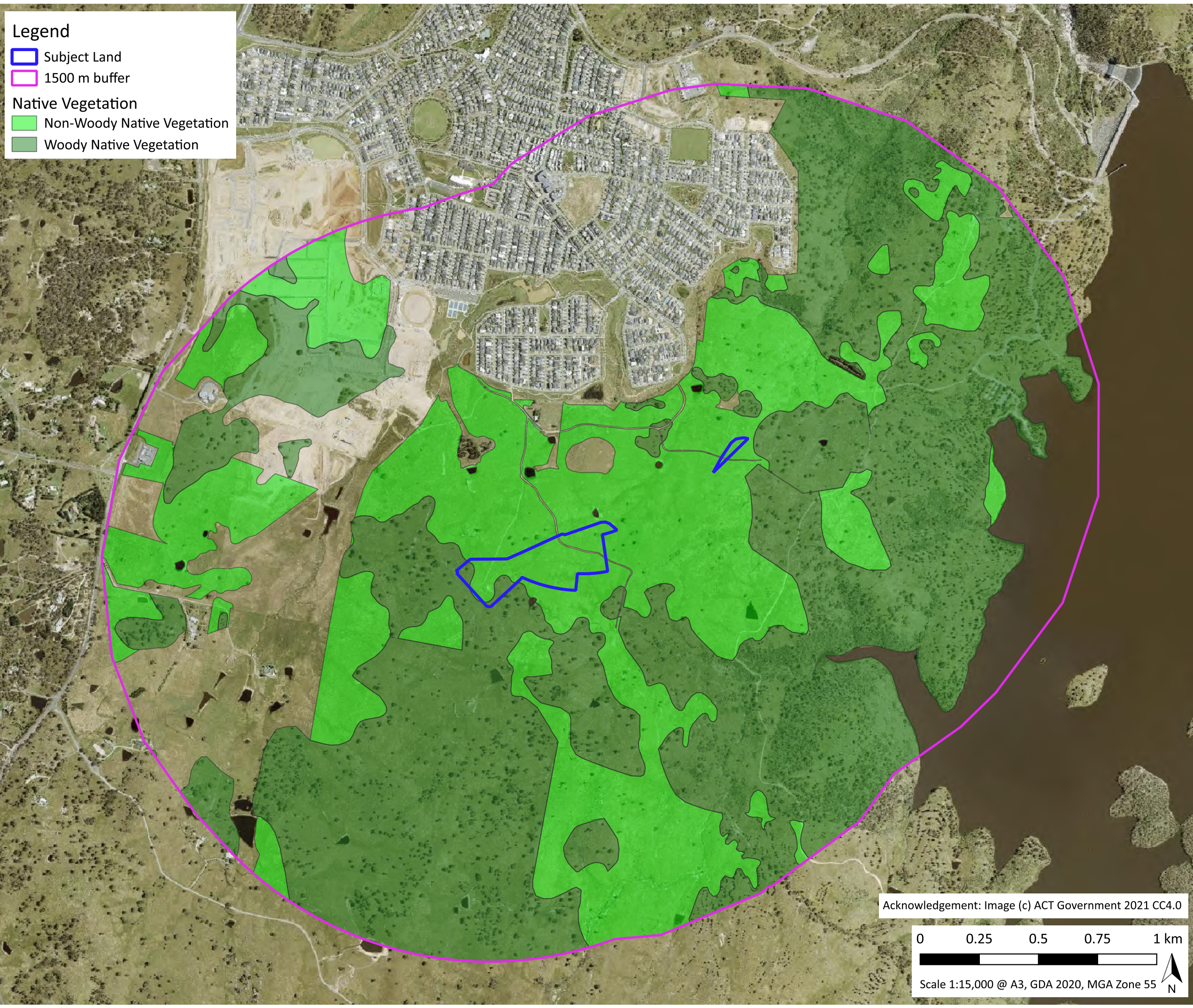


Figure 5. Site Map

2.2 Native Vegetation, Threatened Ecological Communities and Vegetation Integrity

2.2.1 Native vegetation extent

As per the BC Act, native vegetation is defined according to Part 5A of the *Local Land Services Act 2013* (LLS Act), which states:

“(1) For the purposes of this Part, native vegetation means any of the following types of plants native to New South Wales:

- (a) trees (including any sapling or shrub or any scrub),*
- (b) understorey plants,*
- (c) groundcover (being any type of herbaceous vegetation),*
- (d) plants occurring in a wetland.*

(2) A plant is native to New South Wales if it was established in New South Wales before European settlement. The regulations may authorise conclusive presumptions to be made of the species of plants native to New South Wales by adopting any relevant classification in an official database of plants that is publicly accessible.”

As per this definition, planted vegetation which comprises plant species native to NSW, regardless of whether or not the species are indigenous to the specific region and/or PCT of the subject land, is classified as native vegetation.

The Commonwealth Government^{8,9}, ACT Government¹⁰, and previous NSW Government¹¹ assessment guidelines for the temperate grassland and woodland PCTs of the NSW/ACT Southern Tablelands region each declare vegetation as native dominant if 50% or more of the perennial groundlayer is composed of native species. However, no such threshold is defined by the BAM, and advice from the NSW Department of Climate Change, Energy, the Environment, and Water (NSW DCCEEW) has been that the criteria for use in determining native vs. exotic dominance must be more stringent than the previously applied 50/50 rule. It is understood that this is due to the potential for seasonal variation and/or assessor disparity to substantially alter the BAM mapping result. For example, a patch of vegetation that is classified as 55% native in one season may be classified as 45% native in another.

With regard to the above, for the purposes of this BDAR (and the supporting BAM assessment):

1. ‘Native vegetation’ is defined as any plant, naturally occurring or planted, which is native to NSW.

⁸ Commonwealth of Australia (2006). *Policy Statement 3.5: White Box – Yellow Box – Blakely’s Red Gum grassy woodlands and derived native grasslands*. Commonwealth Department of Environment and Heritage.

⁹ Commonwealth of Australia (2016a). *Approved conservation advice for the Natural Temperate Grassland of the South Eastern Highlands (NTG–SEH) ecological community*. Commonwealth Department of the Environment and Energy.

¹⁰ ACT Government (2010). *Survey guidelines for determining lowland vegetation classification and condition in the ACT*. Environment and Sustainable Development Directorate – Conservation Planning and Research.

¹¹ NSW Government (2014). *BioBanking Assessment Methodology 2014*. NSW Government Office of Environment and Heritage.

2. Exotic vegetation is defined as any plant which is not native to NSW.
3. A polygon of vegetation is 'native vegetation' if:
 - a. 35% (i.e. approximately one-third) or more of the perennial groundlayer comprises species native to NSW; and/or
 - b. species native to NSW are present in one or more of the other strata.

2.2.2 Vegetation survey and mapping methods

The vegetation throughout the subject land was surveyed and mapped in accordance with the BAM. Vegetation survey dates and survey effort are detailed in Table 2. The methodology involved the following.

- Mapping of the on-ground boundaries of the Plant Community Types (PCTs).
- Stratification of each PCT into vegetation zones reflecting the broad condition state of vegetation.
- The completion of a series of surveys to measure the composition, structure, and function attributes of the vegetation.

These steps are described in more detail below. The full BAM and supplementary resources are available online via the NSW DCCEEW website

<https://www.environment.nsw.gov.au/topics/animals-and-plants/biodiversity-offsets-scheme/accredited-assessors/biodiversity-assessment-method-2020>.

It is important to note that the information and data collected during vegetation survey and mapping (Section 2.2.2.1 to 2.2.2.4) were also used to assess the subject land for the presence/absence of habitat constraints and/or microhabitats for ecosystem credits species (Section 2.3.3) and species credit species (Section 2.3.4).

Table 2. Vegetation survey dates and survey effort.

Task	Method	Date	Personnel	Survey effort (total)
PCT and Zone mapping	Random meander	20/12/2024	1 person	1 hour
Vegetation assessment	BAM plot	20/12/2024	2 people	4 hours
Remnant tree assessment	Tree assessment	20/12/2024	2 people	1 hour

2.2.2.1 Plant Community Type (PCT) mapping

The on-ground boundaries of each of the PCTs present in the subject land were mapped by marking boundaries directly onto high resolution orthorectified aerial photograph field maps. The PCTs and their characteristics are provided in the NSW Vegetation Information System (VIS)

<https://www.environment.nsw.gov.au/research/Vegetationinformationsystem.htm>.

The PCTs were identified, and their boundaries defined, based on the:

- presence, species, growth form and density of remnant canopy trees and/or stags or stumps of these;
- presence and species of midstorey shrubs and trees;

- floristic composition of the groundstorey; and
- the landscape position and other geographical features (elevation, aspect, soils, apparent hydrology).

2.2.2.2 Vegetation zone definition and mapping

The mapped PCTs were further divided into vegetation zones based on the structure, floristic composition and overall condition ('condition state') of the vegetation. The vegetation zones were mapped in the field and then digitised using GIS which provided accurate calculations of the total area of each vegetation zone in the subject land.

2.2.2.3 Survey plots/transects

A series of a BAM plots (i.e. vegetation assessment survey plot/transect sets) were completed to adequately sample each vegetation zone. As illustrated in Figure 9 from NSW Government (2020b¹²), each BAM Plot involved:

- a. one 20 x 20 m (400 m²) plot, used to assess the composition and structure attributes;
- b. one 20 x 50 m plot (1,000 m²) plot, used to assess the function attributes; and
- c. five 1 m² sub-plots, used to assess average little cover (and other optional groundcover components) for the plot.

All BAM plot locations were selected randomly within the vegetation zone, by marking on a map and walking to the location. BAM plot locations were spread evenly throughout representative vegetation of the subject land (refer to Figure 6).

The number of BAM plots completed in each vegetation zone of the subject land was determined as per the minimum required plot numbers specified in Table 3 of the BAM.

As stated in Section 4.1.2 of the BAM:

*Any part of the subject land that does not contain native vegetation does not need to be assessed under this chapter, **unless** the land is:*

- a. proposed for restoration as part of a biodiversity stewardship site (see Stage 3), or*
- b. assessed as habitat for threatened species according to Chapter 5.*

*All parts of the subject land that do not contain native vegetation must be clearly shown on the Site Map. Justification as to why these areas do not support **any** native vegetation must be provided in the BAR.*

With respect to this BDAR, all vegetation zones meet the definition of BC Act 'native vegetation'. Accordingly, BAM plots were also completed in all vegetation zones. Surveying all zones also ensured that the vegetation composition and potential threatened species habitat were accurately assessed across all of the vegetation condition types present in the subject land.

¹² NSW Government (2020b). *Biodiversity Assessment Method Operational Manual – Stage 1*. State of New South Wales and Department of Climate Change, Energy, the Environment, and Water.

2.2.2.4 Remnant tree assessment

The subject land supports a small number of mature, remnant eucalyptus trees. Several of these trees contain habitat features such as hollows which may be of habitat value to native fauna (i.e. birds, bats, and arboreal mammals). The remnant tree assessment surveyed all remnant trees within the subject land. Each tree's location was recorded via hand-held GPS. Data collected included:

- tree number (a unique number allocated to the tree);
- tree species;
- Diameter at Breast Height (DBH);
- approximate height;
- approximate crown width;
- presence of hollows; and
- other habitat values such as stick nests, mistletoe etc.

2.2.3 BAM targeted survey methods

A number of threatened flora and fauna species were identified by the BAM as potentially occurring in the subject land (referred to as 'species credit species'). However, almost all of the threatened flora and fauna species flagged by the BAM as potentially occurring in the subject land are considered highly unlikely to occur given the condition of the vegetation and habitat combined with the history of disturbance, in particular the clearance of woody vegetation and prolonged period of high intensity stock grazing. This assertion is supported by previous surveys of the subject land and wider Googong Township, all of which indicate that the subject land does not support habitat for threatened flora and fauna.

Survey dates and survey effort for the remaining species credit species considered to have some potential to occur in the subject land are detailed in Table 3. Weather conditions for survey dates are detailed in Table 4. In total, the survey effort for this BDAR totalled 10 person-hours.

Table 3. Flora and fauna survey dates and survey effort

Task	Method	Date	Personnel	Survey effort
Targeted threatened flora survey	Systematic transects / random meander through likely habitat	20/12/2024	2 people	4 hours

Table 4. Survey weather conditions (Canberra Airport, ACT).

Date	Temperature Min-Max	Wind @ 9am	Rain	Cloud (8 th)
20/12/2024	10.8 – 32.7°C	7 km/h SSE	0 mm	0

2.2.3.1 Targeted threatened flora survey

Targeted surveys were undertaken to determine whether any flora species credit species are present within the subject land, and if detected, to establish an estimated habitat extent within the subject land for each species. Targeted threatened flora surveys were undertaken across the entire subject land and involved two ecologists conducting systematic transect and random meander

searches throughout potential threatened flora habitat. If detected, all flora species listed as threatened pursuant to the EPBC Act and/or BC Act identified were recorded via a smartphone-based GIS waypoint and/or a handheld GPS waypoint.

2.2.4 Vegetation survey and mapping results

2.2.4.1 Plant Community Type (PCT) mapping

The subject land has been substantially modified by its current and past land use, which has primarily been Merino sheep grazing with some cattle grazing in recent years. As a result, almost all of the original woody vegetation (canopy, midstorey, and shrubstorey) has been historically cleared across the subject land to promote pastoral productivity, with only four remnant trees remaining (one of which is dead). The prolonged period (at least several decades) of high intensity stock grazing has prevented regeneration of the overstorey and midstorey and depleted the native species diversity in the groundstorey. The resulting vegetation is therefore characterised by an almost absent canopy, an absent midstorey and shrubstorey, and a low diversity groundstorey dominated by disturbance tolerant native grasses and forbs.

The PCTs that occur in the subject land, and their distribution within the subject land, were determined in accordance with the approved BCAR. As shown in Table 5 and Figure 6, the subject land therefore supports two PCTs. The PCTs and their characteristics are available via the NSW Bionet Vegetation Classification Database ([BioNet Vegetation Classification \(nsw.gov.au\)](http://BioNet.Vegetation.Classification.nsw.gov.au)).

Table 5. PCTs recorded in the subject land

PCT	PCT name	PCT description	Occurrence in subject land	TEC status Commonwealth / NSW	PCT % cleared
3375	Monaro-Queanbeyan Rolling Hills Grassy Forest	A tall grassy sclerophyll open forest of quartz-rich hilly country in the Monaro rain-shadow corridor of the upper Murrumbidgee and Snowy River catchments. Occurs at elevations of 550-1000 m. Composition of the tree canopy is variable, including occasional <i>Eucalyptus bridgesiana</i> and rarely <i>E. viminalis</i> , <i>E. dives</i> or <i>E. nortonii</i> . Scattered shrubs commonly include <i>Bursaria spinosa</i> and occasionally <i>Acacia dealbata</i> , <i>Ozothamnus conditus</i> , <i>Cassinia longifolia</i> or <i>A. mearnsii</i> , over a grassy ground layer of <i>Elymus scaber</i> , <i>Poa sieberiana</i> , <i>Austrostipa scabra</i> , <i>Themeda triandra</i> and occasionally <i>Bothriochloa macra</i> .	This PCT was mapped on the higher elevated aspects of the subject land.	Not listed.	61%
3376	Southern Tableland Grassy Box Woodland	This community occurs on soils of moderate to high fertility and generally moderate depth, on undulating terrain between 500 m and 900 m on the tablelands. In its climax form this community would have been characterised by an open canopy dominated by Yellow Box and Blakely's Red Gum, sparse or absent mid and	This PCT was mapped throughout the lower hills and slopes of the subject land.	Critically Endangered (Commonwealth EPBC Act and NSW BC Act) when occurring in a condition consistent with	94%

PCT	PCT name	PCT description	Occurrence in subject land	TEC status Commonwealth / NSW	PCT % cleared
		shrubstorey, together with a defined grassy groundcover supporting a high diversity of native forbs.		the listing criteria of the TEC.	

2.2.4.2 Vegetation zones

A total of five BAM plots were surveyed across three vegetation zones. The locations of the plots are shown in Figure 6 and the results are summarised in Table 6 to Table 8. A summary of plot results and a list of the total flora species recorded are provided in Appendix A and Appendix B. The characteristics of the vegetation zones are as follows.

PCT3375 – Monaro-Queanbeyan Rolling Hills Grassy Forest

- Zone 2 – Canopy – No Regeneration – Native Dominant – Low Diversity.
- Zone 4 – No Canopy – No Regeneration – Native Dominant – Low Diversity.

PCT3376 – Southern Tableland Grassy Box Woodland

- Zone 4 – No Canopy – No Regeneration – Native Dominant – Low Diversity.

2.2.4.3 Remnant tree assessment

As mentioned previously, the subject land has been historically cleared to promote pastoral productivity. As shown in Figure 6 and Appendix C, only four remnant trees remain, one of which is dead. Of those four remnant trees, two support functional hollows. No trees supported stick nests at the time of survey.

Table 6. PCT3375 Zone 2 results summary

	PCT3375 Zone 2
Description	<u>Southern Tableland Dry Sclerophyll Forest – Low Diversity</u> Very sparse canopy and the midstorey and shrubstorey are entirely absent. Low diversity native groundlayer dominated by disturbance tolerant native grasses. Low density of significant weed species. Grazed at the time of survey by sheep and Eastern Grey Kangaroos.
Area – subject land	1.14 ha.
Area – development footprint	0.00 ha
BAM plots assessed	1.
Overstorey Species	Co-dominant = <i>E. rossii</i> , <i>E. nortonii</i> Associate = <i>E. blakelyi</i>
Overstorey Cover	10%.
Overstorey Regeneration	None.
Perennial Groundlayer	82% native.
Native non-grass understorey species	5.
Significant Weeds	Saffron Thistle <i>Carthamus lanatus</i> .
EPBC Act and/or BC Act listed TEC	No.
BC Act Native Vegetation	Yes.



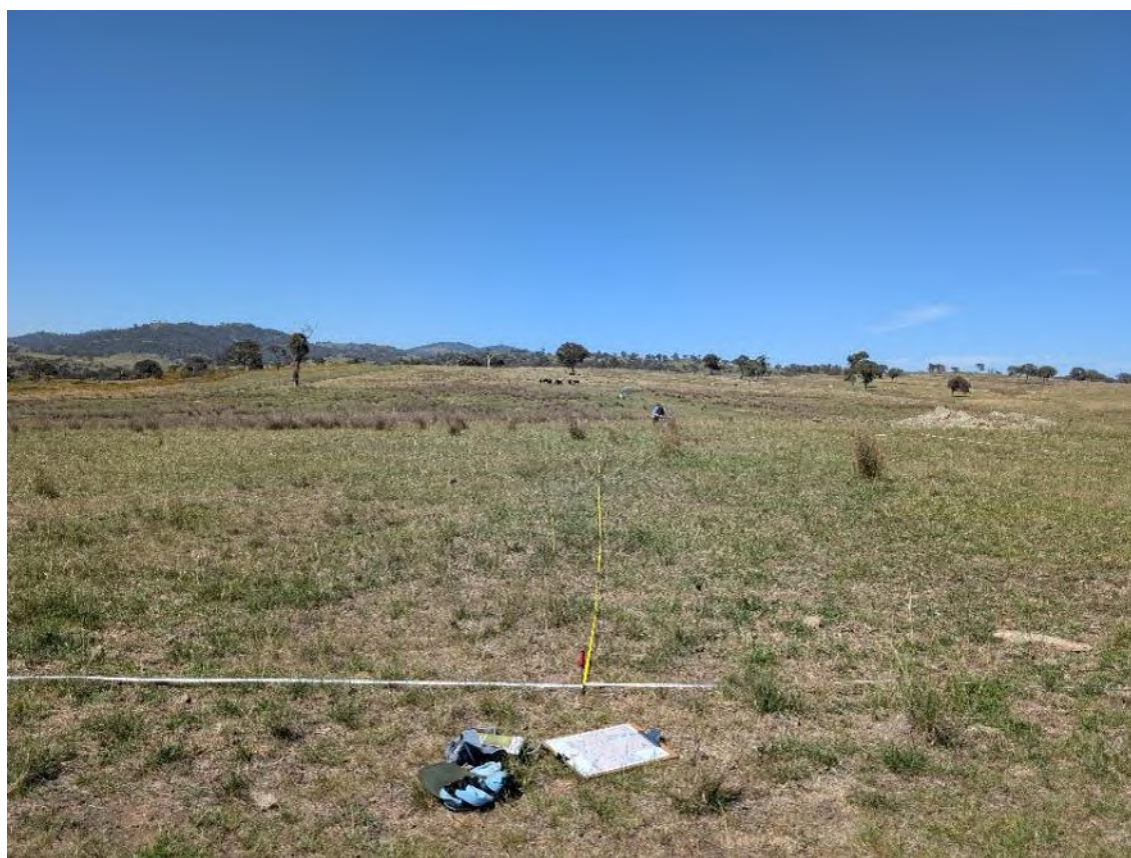
Table 7. PCT3375 Zone 4 results summary

	PCT3375 Zone 4
Description	<u>Southern Tableland Dry Sclerophyll Forest – Low Diversity Derived Grassland</u> Overstorey and midstorey are absent. Low diversity native groundlayer dominated by disturbance tolerant native grasses. Low density of significant weed species. Grazed at the time of survey primarily by sheep and cattle.
Area – subject land	9.26 ha.
Area – development footprint	6.83 ha
BAM plots assessed	3.
Overstorey Species	None.
Overstorey Cover	0%.
Overstorey Regeneration	None.
Perennial Groundlayer	93% - 98% (average of 96%) native.
Native non-grass understorey species	5 – 13 (average of 9).
Significant Weeds	Saffron Thistle, African Lovegrass <i>Eragrostis curvula</i> .
EPBC Act and/or BC Act listed TEC	No.
BC Act Native Vegetation	Yes.



Table 8. PCT3376 Zone 4 results summary

	PCT3376 Zone 4
Description	<u>Southern Tableland Grassy Woodland – Low Diversity Derived Grassland</u> Overstorey and midstorey are absent. Low diversity native groundlayer dominated by disturbance tolerant native grasses. Low density of significant weed species. Grazed at the time of survey primarily by sheep and cattle.
Area – subject land	0.69 ha.
Area – development footprint	0.44 ha
BAM plots assessed	1.
Overstorey Species	None.
Overstorey Cover	0%.
Overstorey Regeneration	None.
Perennial Groundlayer	81% native.
Native non-grass understorey species	7.
Significant Weeds	Saffron Thistle.
EPBC Act and/or BC Act listed TEC	Yes (BC Act).
BC Act Native Vegetation	Yes.



2.2.4.4 Patch size

As defined in the BAM, patch size is –

an area of native vegetation that:

a) occurs on the development site or biodiversity stewardship site, and

b) includes native vegetation that has a gap of less than 100 m from the next area of native vegetation (or $\leq 30\text{m}$ for non-woody ecosystems).

Patch size may extend onto adjoining land that is not part of the development site or biodiversity stewardship site.

With respect to the above, all vegetation zones meet the definition of ‘native vegetation’ as per the BAM (refer to Figure 7). The native vegetation outside of the subject land extends to the south and east of the subject land (Figure 5). When native vegetation from adjoining land is considered, the patch size for all vegetation zones falls within the $>100\text{ ha}$ class as defined by the BAM.

2.2.4.5 Vegetation integrity scores

Zones which support any amount of ‘native vegetation’, regardless of how small, and which occur in the development footprint are used to determine vegetation integrity scores and the impacts associated with a proposed development. Zones which do not support **any** native vegetation do not require further assessment in the BAM except where:

(a) they are proposed for restoration as part of a biodiversity stewardship site; or

(b) they are assessed as habitat for threatened species.

As detailed in Section 2.2.4.4 and shown in Figure 7, all vegetation zones meet the definition of BC Act ‘native vegetation’. However, only PCT3375 Zone 4 and PCT3376 Zone 4 occur in the development footprint; PCT3375 Zone 2 (and the associated remnant trees) will not be impacted by the proposed development. Despite this, all vegetation zones have been assessed to determine a vegetation integrity score so that both the impact and avoidance associated with the proposed development can be assessed and discussed in the BDAR.

Table 9 presents the results of the BAM plot assessments and details the composition, structure, function, and resulting vegetation integrity score for each zone.

Table 9. Vegetation integrity scores.

	PCT3375 Zone 2	PCT3375 Zone 4	PCT3376 Zone 4
Native canopy	Yes	-	-
Groundstorey	Native	Native	Native
Native diversity	Low	Low	Low
Patch size	$> 100\text{ ha}$	$> 100\text{ ha}$	$> 100\text{ ha}$
Area – subject land	1.14 ha	9.26 ha	0.69 ha
Area – development footprint	0.00 ha	6.83 ha	0.44 ha
BAM plots assessed in the subject land	1	3	1
Composition condition score	27.2	39.2	32.5
Structure condition score	59.5	46.7	46.7
Function condition score	12.4	2.0	0.2
Vegetation integrity score	27.2	15.5	11.5

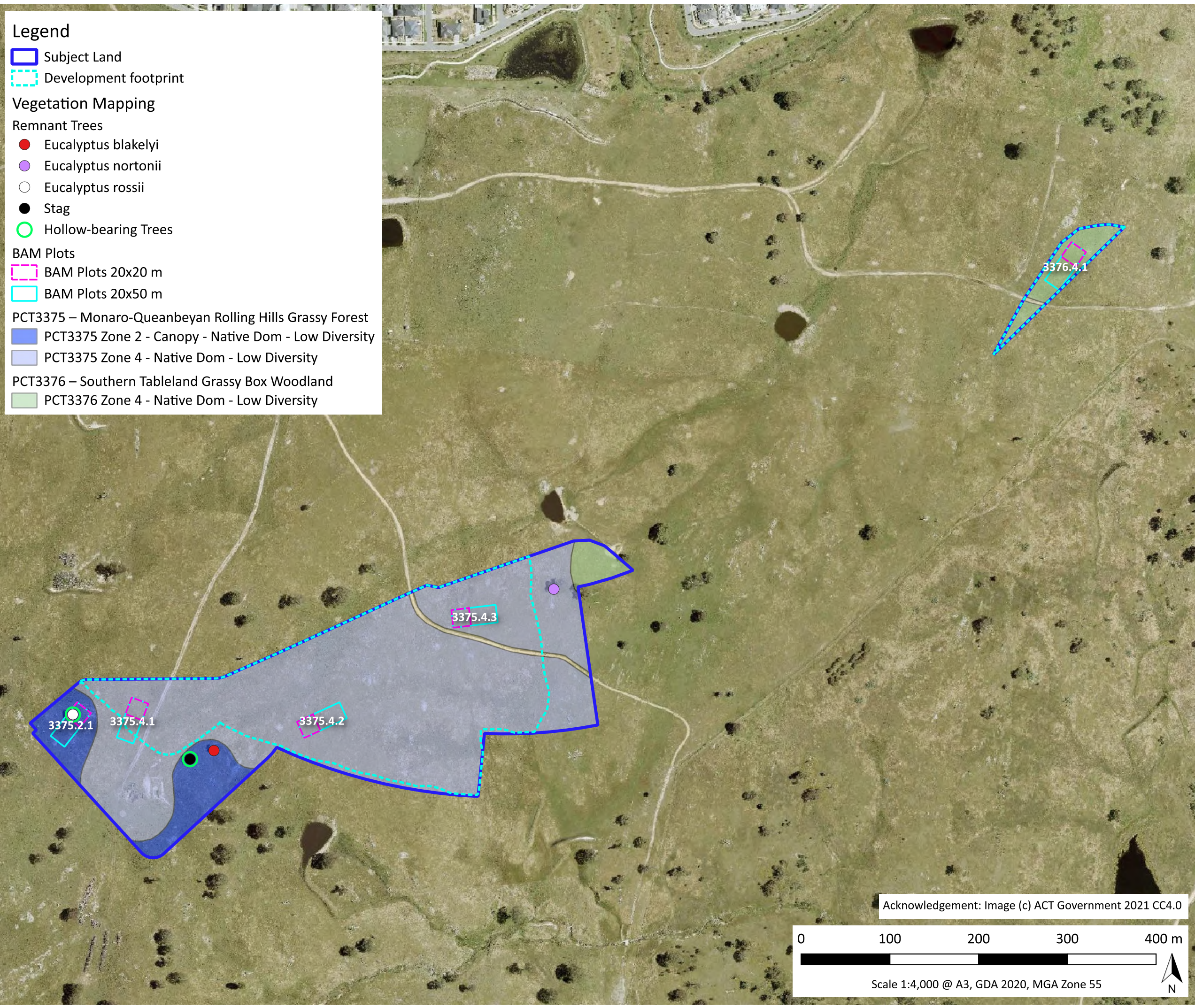


Figure 6. BAM Vegetation Mapping and Survey

Capital Ecology Project No: 3365
Drawn by: S. Reid
Date: 2 April 2025



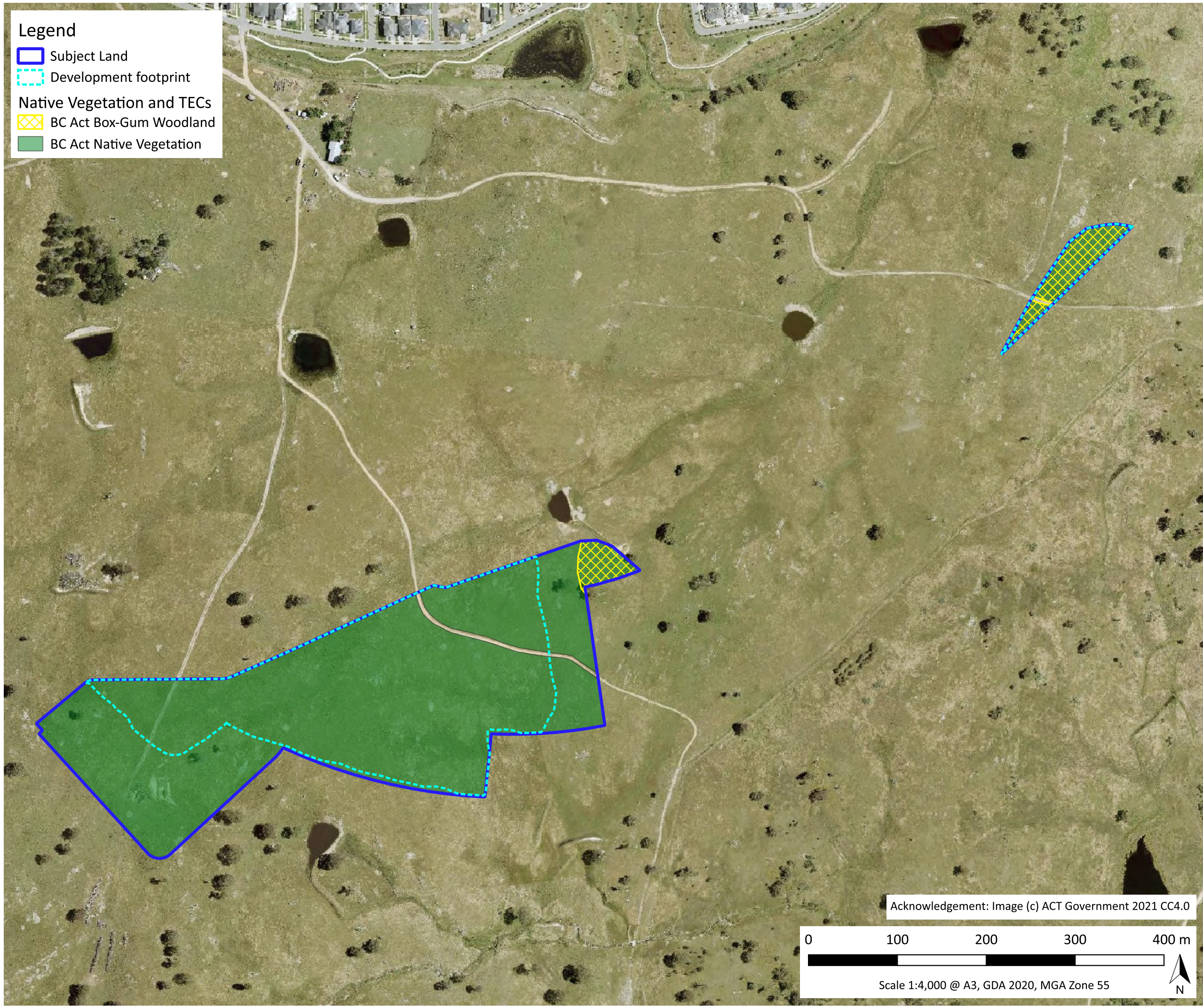
Legend

 Subject Land
 Development footprint

Native Vegetation and TECs

 BC Act Box-Gum Woodland
 BC Act Native Vegetation

Figure 7. BC Act Native Vegetation and Threatened Ecological Communities



Capital Ecology Project No: 3365
 Drawn by: S. Reid
 Date: 2 April 2025

Acknowledgement: Image (c) ACT Government 2021 CC4.0



2.2.5 Threatened ecological communities

2.2.5.1 Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)

Two EPBC Act listed threatened communities have the potential to occur in the subject land, both listed as critically endangered under the EPBC Act: 'Natural Temperate Grassland of the South Eastern Highlands', and 'White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland' (EPBC Act Box-Gum Woodland). Based on the landscape position and species composition of the remnant trees on adjoining and nearby properties, only EPBC Act Box-Gum Woodland is considered to have the potential to occur within the subject land.

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 subject land – Confirmed – The subject land occurs in one of the associated bioregions (i.e. the South Eastern Highlands bioregion) and the entire portion of the subject land mapped as PCT3376 would have once supported the climax community of this TEC.



Assessments of structure and floristic composition were undertaken in each of the condition categories (vegetation zones) of PCT3376 present in the subject land. 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 *Approved Conservation Advice for the White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland* (DCCEEW 2023¹³). The results of this assessment are provided in Table 10.

As detailed in Table 10, none of the vegetation in the subject land meets the criteria for the EPBC Act listed TEC. The subject land therefore does not support EPBC Act Box-Gum Woodland.

¹³ Department of Climate Change, Energy, the Environment and Water (2023). *Conservation advice for White Box-Yellow Box -Blakely's Red Gum Grassy Woodland and Derived Native Grassland*. Canberra.

Table 10. 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
		PCT3376 Zone 4
1.	Is the patch 0.1 ha or larger?	Yes
2.	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/or Blakely's Red Gum are expected to have been historically dominant or co-dominant throughout this zone.
3.	Does the patch have a predominantly native understorey?	Yes The understorey cover was 81% native.
4.	Does the patch have 12 or more native understorey species present (excluding grasses)? There must be at least one important species.	No While the patch is greater than 0.1 ha in size, it only supports 7 native non-grass understorey species.
5.	Does the patch contain 10 or more mature trees per hectare?	No This zone lacks mature trees and regeneration of the overstorey
	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 ¹⁴ of the dominant overstorey eucalypts?	No This zone lacks mature trees and regeneration of the overstorey
Does the patch meet the criteria for the listed TEC?		No

2.2.5.2 Biodiversity Conservation Act 2016 (NSW)

Based on the landscape position and recorded canopy species, only one BC Act listed ecological community has the potential to occur in the subject land: 'White Box – Yellow Box – Blakely's Red Gum Woodland' (BC Act Box-Gum Woodland).

BC Act Box-Gum Woodland

This community, listed as critically endangered in NSW, is described below, together with an assessment of its presence and condition in the subject land.

The below description is extracted from the NSW *Final Determination: White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland* (NSW Threatened Species Scientific Committee 2020, gazetted 17 July 2020¹⁵).

4.2. White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland is characterised by widely-spaced trees with canopies not touching and projected foliage cover generally less than 30% (Prober et al. 2017) ...Understorey shrubs are typically sparse or absent (Prober et al. 2017). The groundcover is dominated by perennial tussock

¹⁴ Defined in Commonwealth of Australia (2006) as 'natural regeneration of the dominant overstorey eucalypts when there are mature trees [circumference of at least 125 cm at 130 cm above the ground] plus regenerating trees of at least 15 cm circumference at 130 cm above the ground.'

¹⁵ NSW Threatened Species Scientific Committee (2020a). *Final Determination: White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland*. Gazetted 17 July 2020.

grasses interspersed with a diverse range of forb species with the families Asteraceae and Fabaceae, and the orders Liliales and Asparagales well represented (Prober et al. 2017).

4.3. White Box – Yellow Box – Blakely’s Red Gum Grassy Woodland and Derived Native Grassland is characteristically dominated by one or more of the species Eucalyptus albens (White Box), E. melliodora (Yellow Box) and E. blakelyi (Blakely’s Red Gum) ...A number of understorey species are typically found throughout almost the entire range of the community, with the exception of the extreme north of its distribution and areas where they have been excluded by grazing.

4.10. The distribution of White Box – Yellow Box – Blakely’s Red Gum Grassy Woodland and Derived Native Grassland spans a range in elevation from approximately 170 m ASL on the western slopes of the Great Dividing Range to approximately 1200 m on the Northern Tablelands of NSW (Beadle 1981), although occurrences on the ranges are typically at lower elevations (Prober et al. 2017). The topography on which the community occurs ranges from flat in the west of its range to hilly and undulating in the east (Prober and Thiele 2004).

4.12. ...For the purpose of establishing the risk of ecosystem/community collapse due to ongoing decline in distribution, it is not possible on the basis of available data, to specify thresholds in either tree cover or species diversity which are indicative of loss of function because: i) no single threshold is appropriate for the range of circumstances and pathways leading to different states of degradation (and hence the potential for recovery); ii) the point at which an ecological community has ceased to function in its original form is inherently uncertain, and the scientific basis upon which symptoms such as loss of tree cover and diversity can be related to ecological function is not established in this case; and iii) recovery may be dependent on active remediation, therefore thresholds can not be determined in absolute terms because they depend on social (collective will) and economic (cost of remediation) factors.

3.1.4. The condition of remnants ranges from relatively good to highly degraded, such as paddock remnants with weedy understories and only a few hardy natives left. Some remnants of the community may consist of only an intact overstorey or an intact understorey but may still have high conservation value due to the flora and fauna they support.

The final determination does not provide specific listing criteria against which to assess a patch of vegetation. However, as described in the final determination, the definition for the BC Act Box-Gum Woodland TEC is extremely broad. In effect, any land for which the climax community is Box-Gum Woodland that has not been cleared and cultivated, become a stock camp, or otherwise been highly modified/degraded, is likely to meet the minimum definition of the BC Act listed TEC.

Presence in the subject land – Present – PCT3376 would have historically supported woodland with Yellow Box and Blakely’s Red Gum as the most common species. PCT3376 Zone 4 lacks and overstorey, midstorey, and shrubstorey and supports a low diversity native groundstorey consisting of grazing tolerant native grasses and forbs.

Conclusion – the subject land therefore supports 0.69 ha of low condition BC Act Box-Gum Woodland in the areas defined by PCT3376 Zone 4 (refer to Figure 6 and Figure 7).

2.2.6 High threat weeds

Table 11 lists the high threat weeds (as per the BAM High Threat Weeds list) that occur in the subject land. None of these weeds are currently widespread or occur at high density.

Table 11. High threat weeds

Species Name	Common Name	Status
Forbs		
<i>Carthamus lanatus</i>	Saffron Thistle	-
Forbs		
<i>Eragrostis curvula</i>	African Lovegrass	AP

Table key. Commonwealth Weed of National Significance = **WoNS**. Regional Priority Weed in the South East Regional Strategic Weed Management Plan¹⁶ under the NSW *Biosecurity Act 2015*: **P** = Prevention; **E** = Eradication; **C** = Containment; **AP** = Asset Protection; **LM** = Species subject to Local Management programs.

2.3 Habitat Suitability for Threatened Species

2.3.1 Fauna habitat

The habitat features in the subject land were identified during the field surveys and assessed regarding their potential value to native fauna species, both threatened and common. The fauna habitat features of the subject land are described in Table 12. It is important to note that the information presented in Table 12 is also used to assess the presence/absence of habitat constraints and/or microhabitats for ecosystem credits species (Section 2.3.3) and species credit species (Section 2.3.4).

Table 12. Fauna habitat features.

Habitat Feature	Description	Relevant Native Fauna Species/Assemblages
Remnant eucalypts	The subject land contains four remnant mature eucalyptus, one of which is dead. Two of these trees contain hollows (Figure 6, Appendix C).	All live remnant trees are likely to provide a foraging resource for a variety of birds and marsupials when in flower. Additionally, hollow-bearing trees may provide a nesting resource to several species of birds and marsupials.
Other native vegetation (i.e. native shrubs, grasses and forbs)	The entire subject land supports a native understorey with a low diversity of non-grass species. The midstorey and shrubstorey are absent throughout the subject land.	The native grasses and forbs may provide a foraging resource to a variety of native birds, reptiles, and herbivorous mammals. Open areas are likely to provide a hunting resource for raptors and other predatory birds. The absent midstorey and shrubstorey are likely to limit the habitat value of the subject land for many of the region's threatened woodland birds and marsupials, which generally prefer to inhabit vegetation where such features are more intact.
Surface rocks and rocky outcrops	Loose surface rock and embedded rocky outcrops are scattered across the subject land.	The loose surface rock is likely to provide refuge and foraging habitat for herpetofauna and invertebrates.

¹⁶ https://www.ils.nsw.gov.au/_data/assets/pdf_file/0006/722706/South-East-Regional-Weed-Mgmt-Plan.pdf

2.3.2 Threatened biodiversity databases

2.3.2.1 Definitions of conservation significance

The conservation significance of a species, population or community is determined by its current listing pursuant to Commonwealth and/or State legislation and associated policy, more specifically:

- National – Listed as threatened (critically endangered, endangered, vulnerable or conservation dependent) pursuant to the EPBC Act; and
- State (NSW) – Listed as threatened (endangered or vulnerable) pursuant to the BC Act.

Species listed as ‘migratory’ under the EPBC Act are also considered where relevant.

2.3.2.2 Database and literature review

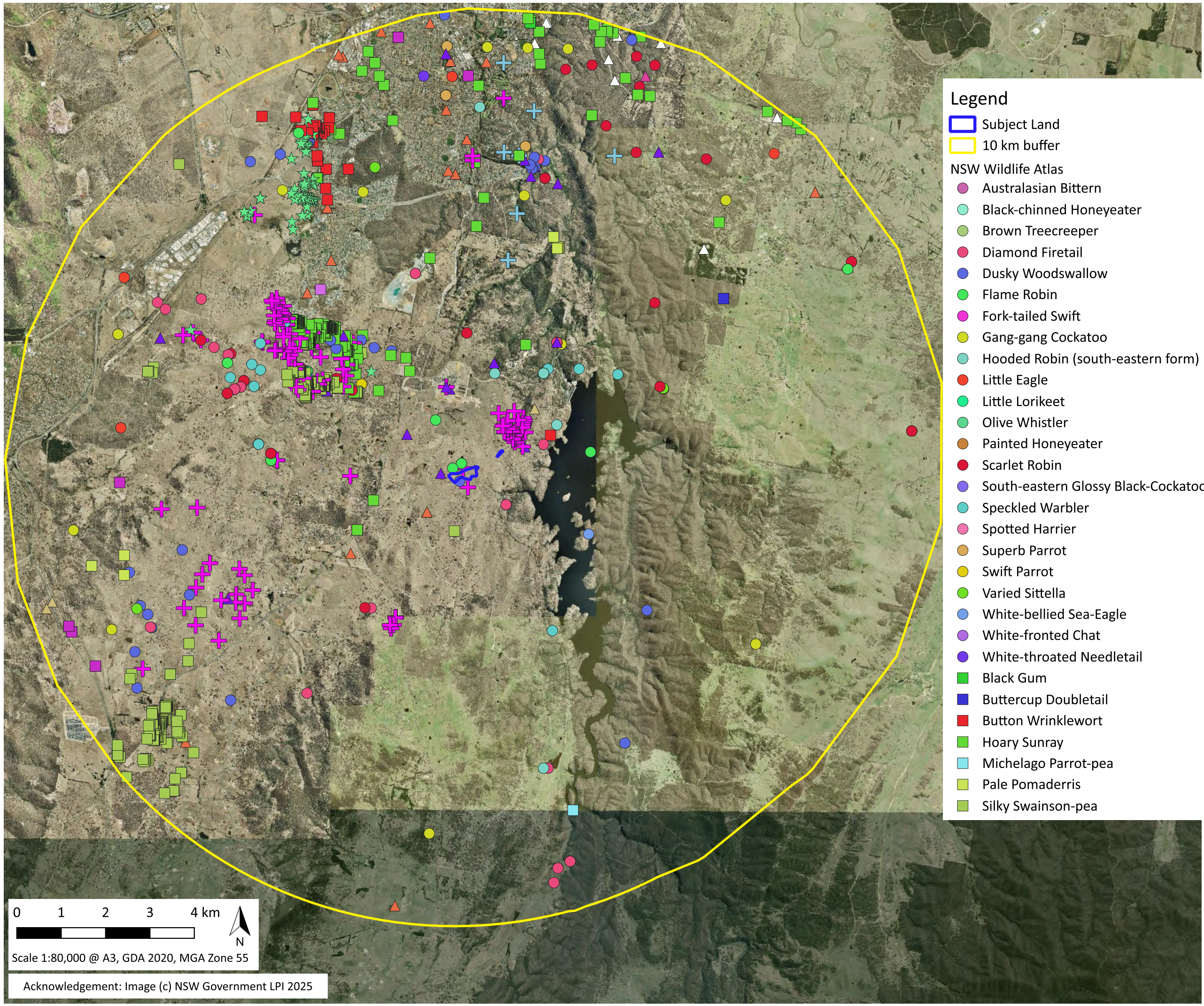
Information regarding the suitability of the habitat in the subject land for threatened species was obtained from the Threatened Biodiversity Data Collection (TBDC), BioNet (e.g. the profile of a threatened species), the BAM Calculator, listing determinations, and/or recovery plans prepared for the species by the Commonwealth Government and NSW Government. This information is used to assess the presence/absence of habitat constraints and/or microhabitats for species identified by the Commonwealth DCCEE online EPBC Act Protected Matters Search Tool (PMST) or flagged by the BAM as ecosystem credits species and species credit species (refer to Section 2.3.3 and Section 2.3.4).

In addition, a database search and literature review were completed to inform likelihood of occurrence assessments and provide useful background information for this assessment. This review included obtaining:

- 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 subject land obtained using the online EPBC Act Protected Matters Search Tool (PMST) 31 March 2025; and
- ecological point data from the NSW Wildlife Atlas (BioNet), downloaded on 2 August 2023, providing a list of threatened species which have previously been recorded in the broad locality of the subject land (i.e. within 10 km) (refer to Figure 8).

Literature referred to during the conduct of the surveys for this study and/or during the preparation of this BDAR is listed under References.

Figure 8. NSW Wildlife Atlas
Threatened Species Search



Capital Ecology Project No: 3365
Drawn by: S. Reid
Date: 2 April 2022



0 1 2 3 4 km
Scale 1:80,000 @ A3, GDA 2020, MGA Zone 55

Acknowledgement: Image (c) NSW Government LPI 2025

2.3.3 Habitat suitability for ecosystem credit species

Threatened species classified as ecosystem credit species and identified by the BAM as potentially occurring in the subject land are listed in Table 13. The value of the habitat in the subject land for ecosystem credit species is determined based on the type and condition (i.e. vegetation integrity) of the vegetation present together with the landscape context (refer to Section 2.1). The likelihood of these species occurring in the subject land is determined based on the presence/absence of specific habitat constraints, geographic limitations, and vagrancy. Information regarding habitat constraints, geographic limitations, and vagrancy were obtained from the TBDC, BioNet (e.g. the profile of a threatened species), and through the BAM Calculator.

Table 13. Predicted ecosystem credit species identified by the BAM as potentially occurring in the subject land

Species	NSW (BC Act) listing status	National (EPBC Act) listing status	Presence	Justification for exclusion
<i>Anthochaera phrygia</i> Regent Honeyeater (Foraging)	Critically Endangered	Critically Endangered	Yes – assumed	-
<i>Aphelocephala leucopsis</i> Southern Whiteface	Vulnerable	Vulnerable	Yes – assumed	-
<i>Artamus cyanopterus cyanopterus</i> Dusky Woodswallow	Vulnerable	-	Yes – assumed	-
<i>Botaurus poiciloptilus</i> Australasian Bittern	Endangered	Endangered	No – habitat constraint	No suitable wetlands in the subject land.
<i>Callocephalon fimbriatum</i> Gang-gang Cockatoo (Foraging)	Endangered	Endangered	Yes – assumed	-
<i>Calyptrorhynchus lathami lathami</i> South-eastern Glossy Black-Cockatoo (Foraging)	Vulnerable	Vulnerable	No – habitat constraint	No Allocasuarina or Casuarina species in the subject land.

Species	NSW (BC Act) listing status	National (EPBC Act) listing status	Presence	Justification for exclusion
<i>Chthonicola sagittata</i> Speckled Warbler	Vulnerable	-	Yes – assumed	-
<i>Circus assimilis</i> Spotted Harrier	Vulnerable	-	Yes – assumed	-
<i>Climacteris picumnus victoriae</i> Brown Treecreeper (eastern subspecies)	Vulnerable	Vulnerable	Yes – assumed	-
<i>Daphoenositta chrysoptera</i> Varied Sittella	Vulnerable	-	Yes – assumed	-
<i>Dasyurus maculatus</i> Spotted-tailed Quoll	Vulnerable	Endangered	Yes – assumed	-
<i>Ephippiorhynchus asiaticus</i> Black-necked Stork	Endangered	-	No – habitat constraint	No suitable wetlands in the subject land.
<i>Falco subniger</i> Black Falcon	Vulnerable	-	Yes - assumed	
<i>Falsistrellus tasmaniensis</i> Eastern False Pipistrelle	Vulnerable	-	Yes – assumed	-
<i>Glossopsitta pusilla</i> Little Lorikeet	Vulnerable	-	Yes – assumed	-
<i>Haliaeetus leucogaster</i> White-bellied Sea-Eagle (Foraging)	Vulnerable	-	Yes - assumed	
<i>Hieraaetus morphnoides</i> Little Eagle (Foraging)	Vulnerable	-	Yes – assumed	-

Species	NSW (BC Act) listing status	National (EPBC Act) listing status	Presence	Justification for exclusion
<i>Hirundapus caudacutus</i> White-throated Needletail	Vulnerable	Vulnerable	Yes – assumed	-
<i>Lathamus discolor</i> Swift Parrot (Foraging)	Endangered	Critically Endangered	Yes – assumed	-
<i>Lophoictinia isura</i> Square-tailed Kite (Foraging)	Vulnerable	-	Yes – assumed	-
<i>Melanodryas cucullata</i> <i>cucullata</i> South-eastern Hooded Robin	Endangered	Endangered	Yes – assumed	-
<i>Miniopterus orianae oceanensis</i> Large Bent-winged Bat (Foraging)	Vulnerable	-	Yes – assumed	-
<i>Neophema pulchella</i> Turquoise Parrot	Vulnerable	-	Yes – assumed	-
<i>Pachycephala olivacea</i> Olive Whistler	Vulnerable	-	Yes – assumed	-
<i>Petroica boodang</i> Scarlet Robin	Vulnerable	-	Yes – assumed	-
<i>Petroica phoenicea</i> Flame Robin	Vulnerable	-	Yes – assumed	-
<i>Pteropus poliocephalus</i> Grey-headed Flying-fox (Foraging)	Vulnerable	Vulnerable	Yes – assumed	-
<i>Saccolaimus flaviventris</i> Yellow-bellied Sheathtail-bat	Vulnerable	-	Yes – assumed	-

Species	NSW (BC Act) listing status	National (EPBC Act) listing status	Presence	Justification for exclusion
<i>Stagonopleura guttata</i> Diamond Firetail	Vulnerable	Vulnerable	Yes – assumed	-
<i>Suta flagellum</i> Little Whip Snake	Vulnerable	-	Yes – assumed	-
<i>Varanus rosenbergi</i> Rosenberg's Goanna	Vulnerable	-	Yes – assumed	-

2.3.4 Habitat suitability for species credit species

2.3.4.1 Candidate species credit species

Threatened species classified as species credit species and identified by the BAM as potentially occurring in the subject land are listed in Table 14. The value of the habitat in the subject land for species credit species is determined based on the type and condition (i.e. vegetation integrity) of the vegetation present together with the landscape context (refer to Section 2.1). The likelihood of these species occurring in the subject land is determined based the presence/absence of specific habitat constraints, microhabitat requirements, geographic limitations, vagrancy, species records (BioNet and ecological reports), and/or the results of targeted surveys. Information regarding habitat constraints, microhabitat requirements, geographic limitations, and vagrancy were obtained from the TBDC, BioNet (e.g. the profile of a threatened species), and through the BAM Calculator. A summary of the findings from each targeted survey is given in Section 2.3.4.2.

Table 14. Candidate species credit species identified by the BAM as potentially occurring in the subject land

Species	NSW (BC Act) listing status	National (EPBC Act) listing status	Habitat requirements	Presence	Justification for exclusion
<i>Anthochaera phrygia</i> Regent Honeyeater (Breeding)	Critically Endangered	Critically Endangered	This species inhabits dry open forest and woodland (particularly Box-Ironbark woodland and riparian forests of River Sheoak) that have significantly large numbers of mature trees, high canopy cover, and abundance of mistletoes. The species breeds in Box-Ironbark and other temperate woodlands, and in riparian gallery forest dominated by River Sheoak. The species usually nests in tall mature eucalypts, Sheoaks, or mistletoe haustoria. There are only three known key breeding regions: north-east Victoria (Chiltern-Albury) and NSW (Capertee Valley and the Bundarra-Barraba region). The TBDC lists 'as per important habitat map' as a breeding habitat constraint for this species.	No – habitat constraint	The subject land is not identified on the 'BAM – Important Areas viewer' map ¹⁷ . <u>Conclusion – the subject land lacks the breeding habitat constraints required for this species.</u>
<i>Aprasia parapulchella</i> Pink-tailed Legless Lizard	Vulnerable	Vulnerable	This species inhabits sloping, open woodland areas with predominantly native grassy ground layers, particularly those dominated by Kangaroo Grass. Sites are typically well-drained, with rocky outcrops or scattered, partially buried rocks. The TBDC lists 'rocky areas or within 50 m of rocky areas' as a habitat constraint for this species. Some of the main threats to this species listed in the TBDC are habitat loss through bush-rock removal and vegetation clearing for agricultural purposes (e.g. pasture improvement including slashing, ploughing, and sowing of non-native species), overgrazing by domestic stock, and invasion of habitat by weeds.	No – microhabitat features	As detailed in the BCAR, numerous surveys for the species have been conducted across all neighbourhoods of Googong Township and the adjacent areas. Pink-tailed Worm-lizard has only ever been recorded in the Pink-Tailed Worm-lizard Conservation Area and in a small patch of habitat 200 m to the south of the subject land. Both of these areas are characterised by sloping land associated with watercourses and a moderate to high diversity native groundstorey that supports a substantial component of Kangaroo Grass <i>Themeda triandra</i> . In contrast, the subject land does not support these microhabitat features, being in gently sloping land that contains no watercourses and is dominated by a low diversity native groundstorey that does not support a substantial component of Kangaroo Grass. <u>Conclusion – it is unlikely that the subject land supports habitat for this species.</u>
<i>Callocephalon fimbriatum</i> Gang-gang Cockatoo (Breeding)	Endangered	Endangered	In spring and summer, this species is generally found in tall mountain forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests. In autumn and winter, the species often moves to lower altitudes in drier more open eucalypt forests and woodlands, particularly box-gum and box-ironbark assemblages, or in dry forest in coastal areas and often found in urban areas. Gang-Gang Cockatoos favour old growth forest and woodland for nesting and roosting. The TBDC lists 'Eucalypt tree species with hollows at least 3 m above the ground and with hollow diameter of 7 cm or larger' as a breeding habitat constraint for this species.	No – habitat constraint, microhabitat features	The development footprint does not support any remnant trees (i.e. no trees will be impacted by the future development of the subject land). Furthermore, almost the entire overstorey in the subject land has been cleared and does not support tall mountain forests or woodlands, heavily timbered or mature wet sclerophyll forests, or old growth forest or woodland. Finally, targeted bird surveys performed for other ecological studies ¹⁸ of the immediate surrounds have not recorded this species nesting in the locality. <u>Conclusion – it is unlikely that the subject land supports breeding habitat for this species. In addition, the development footprint lacks the breeding habitat constraints required for this species.</u>

¹⁷ https://webmap.environment.nsw.gov.au/HtmI5Viewer291/index.html?viewer=BAM_ImportantAreas

¹⁸ Biosis (2014), Biosis (2015a), Biosis (2015b), Capital Ecology (2016), Capital Ecology (2017b), Capital Ecology (2019a), Capital Ecology (2021).

Species	NSW (BC Act) listing status	National (EPBC Act) listing status	Habitat requirements	Presence	Justification for exclusion
<i>Calotis glandulosa</i> Mauve Burr-daisy	Vulnerable	Vulnerable	This species is found in montane and subalpine grasslands in the Australian Alps and is found in subalpine grassland (dominated by <i>Poa</i> spp.), and montane or natural temperate grassland dominated by Kangaroo Grass and Snow Gum Woodlands on the Monaro and Shoalhaven area. It appears to be a coloniser of bare patches, which explains why it often occurs on roadsides. The species does not persist in heavily grazed pastures of the Monaro or the Shoalhaven area. The BAM Calculator lists ' <i>South of Michelago</i> ' as a geographic constraint for this species.	No – geographic constraint	The subject land is north of Michelago. <u>Conclusion – geographic limitations remove this species from further consideration.</u>
<i>Calyptorhynchus lathami lathami</i> South-eastern Glossy Black-Cockatoo (Breeding)	Vulnerable	Vulnerable	This species inhabits open forest and woodlands of the coast and the Great Dividing Range where stands of Sheoak occur. Black Sheoak <i>Allocasuarina littoralis</i> and Forest Sheoak <i>Allocasuarina torulosa</i> are important foods. Inland populations feed on a wide range of Sheoaks, including Drooping Sheoak, <i>Allocasuarina diminuta</i> and <i>A. gymnathera</i> . Belah (<i>Casuarina cristata</i>) is also utilised and may be a critical food source for some populations. In the Riverina, birds are associated with hills and rocky rises supporting Drooping Sheoak, but also recorded in open woodlands dominated by Belah. The species is dependent on large hollow-bearing eucalypts for nest sites and a single egg is laid between March and May. The TBDC lists ' <i>Living or dead tree with hollows greater than 15cm diameter and greater than 8m above ground</i> ' as a breeding habitat constraint for this species and notes that ' <i>the species may need larger patches and more intact landscapes for breeding.</i> '	No – habitat constraint	The subject land does not support trees with hollows greater than 15 cm in diameter and higher than 8 m above the found. In addition, the development footprint does not support any remnant trees (i.e. no trees will be impacted by the future development of the subject land). <u>Conclusion – the subject land lacks the breeding habitat constraints required for this species.</u>
<i>Cercartetus nanus</i> Eastern Pygmy-possum	Vulnerable	-	This species is found in a broad range of habitats, but in most areas woodlands and heath appear to be preferred. It feeds primarily on nectar and pollen collected from banksias, eucalypts, and bottlebrushes, but also feeds on insects throughout the year. The species shelters in tree hollows, rotten stumps, holes in the ground, abandoned bird-nests, Ringtail Possum dreys, or thickets of vegetation, (e.g. grass-tree skirts). Tree hollows are favoured for breeding. The TBDC lists ' <i>declining shrub diversity in forests and woodlands due to overgrazing by stock and rabbits</i> ', ' <i>predation from cats, dogs and foxes</i> ', and ' <i>loss of nest sites due to removal of firewood</i> ' as some of the key threats to the species.	No – habitat degraded	The subject land and surrounds have been heavily cleared and grazed over an extended period of time. As a result, the subject land lacks a midstorey and shrubstorey and only supports four remnant trees (one of which is dead). As such, the subject land lacks the primary microhabitat features required for this species. The habitat is therefore degraded to the extent that the species is unlikely to utilise the subject land. <u>Conclusion – it is unlikely that the subject land supports habitat for this species.</u>
<i>Delma impar</i> Striped Legless Lizard	Vulnerable	Vulnerable	Striped Legless Lizard is mainly found in Natural Temperate Grassland but has also been captured in grasslands that have a high exotic component. It is also found in secondary grassland near Natural Temperate Grassland and occasionally in open Box-Gum Woodland. Habitat is characterised by perennial, tussock-forming grasses such as Kangaroo Grass <i>Themeda triandra</i> , Speargrasses <i>Austrostipa</i> spp., Poa Tussocks <i>Poa</i> spp., and occasionally Wallaby Grasses <i>Rytidosperma</i> spp.. The species can sometimes be found in modified grasslands with a significant content of exotic grasses, and in grasslands with significant amounts of surface rocks (used for shelter). Some of the main threats to this species listed in the TBDC are habitat loss through vegetation clearing for agricultural purposes (e.g. pasture improvement including slashing, ploughing, and sowing of non-native species), habitat degradation through invasion by weeds or escaped pasture species, and overgrazing by domestic stock.	No	No records exist of the species in the surrounding area. Rock-turning surveys completed for the BCAR and previous studies of the Googong Township did not record the species, nor did the pitfall trapping survey undertaken in 2009 (Biosis Research and Ecowise Environmental 2009). Previous tile surveys performed by the ACT Government along the Googong Foreshores over multiple years have not detected this species. <u>Conclusion – the species is considered unlikely to occur in the subject land.</u>
<i>Dillwynia glauca</i> Michelago Parrot-pea	Endangered	-	Occurs on exposed patches of clay or on rocky outcrops in eucalypt woodland often dominated by Scribbly Gum (<i>Eucalyptus rossii</i>), Snow Gum (<i>E. pauciflora</i>), Broad-leafed Peppermint (<i>E. dives</i>) and Red Stringybark (<i>E. macrorhyncha</i>). The understorey may be either grassy or shrubby. Grows adjacent to Natural Temperate Grassland in the Michelago area.	No – surveyed	The species was not recorded during targeted surveys. <u>Conclusion – this species does not occur in the subject land.</u>

Species	NSW (BC Act) listing status	National (EPBC Act) listing status	Habitat requirements	Presence	Justification for exclusion
<i>Diuris aequalis</i> Buttercup Doubletail	Endangered	Endangered	This species has been recorded in forest, low open woodland with a grassy understorey, and secondary grassland on the higher parts of the Southern and Central Tablelands (especially on the Great Dividing Range). Populations tend to contain few, scattered individuals; despite extensive surveys, only about 200 plants from 20 populations are known. The species has been recorded in Kanangra-Boyd National Park, Gurnang State Forest, towards Wombeyan Caves, the Taralga - Goulburn area, and the ranges between Braidwood, Tarago and Bungendore. The BAM Calculator lists ' <i>North of Hoskinstown</i> ' as a geographic limitation for this species and the TBDC lists vegetation clearing for agricultural purposes, overabundant native herbivores, feral pigs, overgrazing by domestic stock, rabbits, and invasive grasses as some of the key threats to the species.	No – geographic constraint, habitat degraded	The subject land is not north of Hoskinstown. Furthermore, this species is highly intolerant of grazing, and the subject land has been grazed over an extended period. It is therefore likely that the habitat in the subject land has been degraded to the extent that the species is unlikely to occur. <u>Conclusion – geographic limitations remove this species from further consideration.</u>
<i>Dodonaea procumbens</i> Creeping Hop-bush	Vulnerable	Vulnerable	Creeping Hop-bush is found in the dry areas of the Monaro, between Michelago and Dalgety. It grows in Natural Temperate Grassland or fringing eucalypt woodland of Snow Gum. It is found in open bare patches where there is little competition from other species, on sandy-clay soils, usually on or near vertically-tilted shale outcrops. The species does not persist in heavily grazed pastures of the Monaro. The BAM Calculator lists ' <i>Cooma-Monaro Shire south of Michelago</i> ' as a Geographic limitation for this species.	No – geographic constraint	The subject land is north of Michelago. <u>Conclusion – geographic limitations remove this species from further consideration.</u>
<i>Eucalyptus aggregata</i> Black Gum	Vulnerable	Vulnerable	Black Gum has a moderately narrow distribution, occurring mainly in the wetter, cooler, and higher parts of the tablelands (e.g. in the Blayney, Crookwell, Goulburn, Braidwood, and Bungendore districts). The species grows on alluvial soils in the lowest parts of the landscape (i.e. on cold and poorly drained flats and hollows adjacent to creeks and small rivers). It often grows with other cold-adapted eucalypts (e.g. Snow Gum <i>E. pauciflora</i> , Ribbon Gum <i>E. viminalis</i> , Candlebark <i>E. rubida</i> , Black Sallee <i>E. stellulata</i> , and Swamp Gum <i>E. ovata</i>). Black Gum usually occurs in an open woodland formation with few shrubs and a grassy groundlayer dominated by either River Tussock <i>Poa labillardierei</i> or Kangaroo Grass <i>Themeda triandra</i> . Black Gum can occur as isolated paddock trees in modified native or exotic pastures. The BAM Calculator lists ' <i>East of a line that runs north to south about 5 km west of Bungendore</i> ' as a Geographic limitation for this species.	No – geographic limitation	The subject land is greater than 5 km to the west of Bungendore. <u>Conclusion – geographic limitations remove this species from further consideration.</u>
<i>Eucalyptus pulverulenta</i> Silver-leafed Gum	Vulnerable	Vulnerable	This species grows in shallow soils as an understorey plant in open forest, typically dominated by Brittle Gum <i>E. mannifera</i> , Red Stringybark <i>E. macrorhynca</i> , Broad-leafed Peppermint <i>E. dives</i> , Silvertop Ash <i>E. sieberi</i> and Apple Box <i>E. bridgesiana</i> . The BAM Calculator lists ' <i>South of Tinderry Range</i> ' as a geographic limitation for this species.	No – geographic limitation	The subject land does not occur south of the Tinderry Range. <u>Conclusion – geographic limitations remove this species from further consideration.</u>
<i>Haliaeetus leucogaster</i> White-bellied Sea-Eagle (Breeding)	Vulnerable	-	Breeding habitat consists of mature tall open forest, open forest, tall woodland, and swamp sclerophyll forest close to foraging habitat. Nest trees are typically large emergent eucalypts and often have emergent dead branches or large dead trees nearby which are used as 'guard roosts'. Nests are large structures built from sticks and lined with leaves or grass. The TBDC lists ' <i>living or dead mature trees in suitable vegetation within 1km of a river, lake, large dam, creek, wetland, or coastline</i> ' as a breeding habitat constraint.	No – surveyed	The species was not recorded during surveys and the subject land does not support any appropriately sized stick nests. <u>Conclusion – the species is considered unlikely to breed in the subject land.</u>

Species	NSW (BC Act) listing status	National (EPBC Act) listing status	Habitat requirements	Presence	Justification for exclusion
<i>Heleioporus australiacus</i> Giant Burrowing Frog	Vulnerable	Vulnerable	This species appears to exist as two distinct populations: a northern population largely confined to the sandstone geology of the Sydney Basin and extending as far south as Ulladulla, and a southern population occurring from north of Narooma through to Walhalla, Victoria. The species is found in heath, woodland, and open dry sclerophyll forest on a variety of soil types except those that are clay based. Breeding habitat of this species is generally soaks or pools within first or second order streams. They are also commonly recorded from 'hanging swamp' seepage lines and where small pools form from the collected water. When breeding, frogs will call from open spaces, under vegetation or rocks or from within burrows in the creek bank. The species spends more than 95% of its time in non-breeding habitat in areas up to 300 m from breeding sites. Whilst in non-breeding habitat it burrows below the soil surface or in the leaf litter. The TBDC lists 'Habitat loss through clearing for residential, agricultural and urban infrastructure development', 'Disease (chytrid fungus)', and 'Reduction of water quality generally in the vicinity of urban development' as some of the key threats to the species.	No – microhabitat features	The subject land does not contain potential habitat for the species as it lacks appropriate streams, rivers, other suitable waterbodies, and riparian habitat. <u>Conclusion – the species is considered unlikely to occur in the subject land.</u>
<i>Hieraaetus morphnoides</i> Little Eagle (Breeding)	Vulnerable	-	This species occupies open eucalypts forest, woodland, or open woodland. Sheoak or <i>Acacia</i> woodlands and riparian woodlands of interior NSW are also used. The species nests in tall living trees within a remnant patch, where pairs build a large stick nest in winter. The TBDC lists 'Nest trees - live (occasionally dead) large old trees within vegetation' as a breeding habitat constraint for this species.	No – surveyed	The species was not recorded during surveys and the subject land does not support any appropriately sized stick nests. In addition, targeted bird surveys performed for other ecological studies ¹⁹ of the immediate surrounds have not recorded this species nesting in the locality. <u>Conclusion – the species is considered unlikely to breed in the subject land.</u>
<i>Keyacris scurra</i> Key's Matchstick Grasshopper	Endangered	Endangered	Key's Matchstick Grasshopper is usually found in native grasslands, but it has also been recorded in other vegetation associations containing a native grass understory (especially Kangaroo Grass <i>Themeda triandra</i>) and known food plants (particularly Asteraceae, indicator species include the daisy <i>Chrysocephalum apiculatum</i>). Although it does not appear to feed on Kangaroo Grass, it may be important for providing protection from predators. More recently, however, opportunistic sightings of Key's Matchstick Grasshopper have been reported in a wide range of vegetation types in south-east NSW including wet sclerophyll forest, montane low forest, dry woodlands, heathland and montane grasslands. In some reported locations there is an absence of Kangaroo Grass and very few or no Asteraceae. Where the understory is favourable for the species, habitat under scattered trees could be suitable. Being flightless, this species does not disperse large distances (< 10 m).	No – habitat degraded	The study area does not support typical habitat for this species as it lacks a moderate to high diversity groundstorey (including known Key's Matchstick Grasshopper food plants) and does not support a substantial component of Kangaroo Grass. Furthermore, the subject land has been grazed over an extended period, which is known to degrade habitat for the species. It is therefore likely that the habitat in the subject land has been degraded to the extent that the species is unlikely to occur. <u>Conclusion – the species is considered unlikely to occur in the subject land.</u>
<i>Lathamus discolor</i> Swift Parrot (Breeding)	Endangered	Critically Endangered	This species breeds in Tasmania from September to January, nesting in old trees with hollows and feeding in forests dominated by Tasmanian Blue Gum <i>Eucalyptus globulus</i> . The species migrates between February and October to south-eastern Australia from Victoria and the eastern parts of South Australia to south-east Queensland. On the mainland, they occur in areas where eucalypts are flowering profusely or where there are abundant lerp (from sap-sucking bugs) infestations. In NSW, the species mostly occurs on the coast and south west slopes. The TBDC lists 'as per Important Habitat Map' as a breeding habitat constraint for this species.	No – habitat constraint	The subject land is not identified on the 'BAM – Important Areas viewer' map ²⁰ . <u>Conclusion – the subject land lacks the breeding habitat constraints required for this species.</u>

¹⁹ Biosis (2014), Biosis (2015a), Biosis (2015b), Capital Ecology (2016), Capital Ecology (2017b), Capital Ecology (2019a), Capital Ecology (2021).

²⁰ https://webmap.environment.nsw.gov.au/Html5Viewer291/index.html?viewer=BAM_ImportantAreas

Species	NSW (BC Act) listing status	National (EPBC Act) listing status	Habitat requirements	Presence	Justification for exclusion
<i>Leucochrysum albicans</i> subsp. <i>tricolor</i> Hoary Sunray	Endangered	Endangered	This species occurs in a wide variety of grassland, woodland, and forest habitats, generally on relatively heavy soils. It can occur in modified habitats such as semi-urban areas and roadsides. It is highly dependent on the presence of bare ground for germination, and in some areas disturbance is required for successful establishment.	No – surveyed	The species was not recorded during targeted surveys. <u>Conclusion – the species is considered unlikely to occur in the subject land.</u>
<i>Litoria aurea</i> Green and Golden Bell Frog	Endangered	Vulnerable	The species inhabits marshes, dams, and stream-sides, particularly those containing bullrushes (<i>Typha</i> spp.) or spikerushes (<i>Eleocharis</i> spp.). Optimum habitat includes water-bodies that are unshaded, free of predatory fish such as Plague Minnow (<i>Gambusia holbrooki</i>), have a grassy area nearby, and diurnal sheltering sites available. Some sites, particularly in the Greater Sydney region, occur in highly disturbed areas. The TBDC lists 'Within 1km of wet areas [Semi-permanent/ephemeral wet areas]', 'Within 1km of swamp', and 'Within 1km of waterbody' as habitat constraints for this species.	No – habitat constraint	The subject land does not contain potential habitat for the species as it lacks appropriate streams, rivers, other suitable waterbodies, and riparian habitat. <u>Conclusion – the species is considered unlikely to occur in the subject land.</u>
<i>Litoria castanea</i> Yellow-spotted Tree Frog	Critically Endangered	Critically Endangered	Historically, this species occurred in two separate highland ranges: on the New England Tableland, and on the southern and central tablelands from Bathurst to Bombala. Following the chytrid virus pandemic in the 1970s, this species went unrecorded for 30 years and was believed to be extinct, until it was rediscovered in 2009 on the Southern Tablelands. This population - near Yass - remains the only known extant site of the species.	No – microhabitat features	The subject land does not contain potential habitat for the species as it lacks appropriate streams, rivers, other suitable waterbodies, and riparian habitat. <u>Conclusion – the species is considered unlikely to occur in the subject land.</u>
<i>Litoria raniformis</i> Southern Bell Frog	Endangered	Vulnerable	The species is usually found in or around permanent or ephemeral Black Box/Lignum/Nitre Goosefoot swamps, Lignum/Typha swamps and River Red Gum swamps or billabongs along floodplains and river valleys. They are also found in irrigated rice crops, particularly where there is no available natural habitat. Breeding occurs during the warmer months and is triggered by flooding or a significant rise in water levels. During the breeding season, animals are found floating amongst aquatic vegetation (especially cumbungi or Common Reeds) within or at the edge of slow-moving streams, marshes, lagoons, lakes, farm dams, and rice crops. Tadpoles require standing water for at least 4 months for development and metamorphosis to occur but can take up to 12 months to develop. Outside the breeding season animals disperse away from the water and take shelter beneath ground debris such as fallen timber and bark, rocks, grass clumps and in deep soil cracks.	No – microhabitat features	The subject land does not contain potential habitat for the species as it lacks appropriate streams, rivers, other suitable waterbodies, and riparian habitat. <u>Conclusion – the species is considered unlikely to occur in the subject land.</u>
<i>Lophoictinia isura</i> Square-tailed Kite (Breeding)	Vulnerable	-	This species is found in a variety of timbered habitats including dry woodlands and open forests. It shows a particular preference for timbered watercourses. Breeding is from July to February, with nest sites generally located along or near watercourses, in a fork or on large horizontal limbs. The TBDC lists 'nest trees' as a breeding habitat constraint. The TBDC general notes state 'it will be difficult to identify a Kite nest (there are lots of comparable sized stick nests built by other species), especially given Kites have large territories and other stick nesters will undoubtedly also be nesting where Kites might be recorded. Kites will need to be in attendance to confirm breeding sites.'	No – microhabitat features, habitat degraded	Almost all of the original woody vegetation has been historically cleared across the subject land. As a result, no timbered watercourses occur in the subject land and the subject land lacks the primary breeding microhabitat features required for this species. The habitat is therefore degraded to the extent that the species is unlikely to utilise the subject land. In addition, the Square-tailed Kite has not been recorded within 10 km of the subject land and other ecological studies ²¹ of the immediate surrounds have not recorded this species. <u>Conclusion – the species is considered unlikely to breed in the subject land</u>

²¹ Biosis (2014), Biosis (2015a), Biosis (2015b), Capital Ecology (2016), Capital Ecology (2017b), Capital Ecology (2019a), and Capital Ecology (2021).

Species	NSW (BC Act) listing status	National (EPBC Act) listing status	Habitat requirements	Presence	Justification for exclusion
<i>Miniopterus orianae oceanensis</i> Large Bent-winged Bat (Breeding)	Vulnerable	-	Caves are the primary roosting habitat, but the species also use derelict mines, storm-water tunnels, buildings, and other man-made structures. The species forms discrete populations centred on a maternity cave that is used annually in spring and summer for the birth and rearing of young. Maternity caves have very specific temperature and humidity regimes. Breeding or roosting colonies can number from 100 to 150,000 individuals. The TBDC list the following breeding habitat constraint, 'Cave, tunnel, mine, culvert or other structure known or suspected to be used for breeding including species records with microhabitat code "IC - in cave", observation type code "E nest-roost", with numbers of individuals >500.'	No – habitat constraint	The subject land does not contain potential breeding habitat (i.e. caves, tunnels, mines, culverts, etc.). <u>Conclusion – the subject land lacks the breeding habitat constraints required for this species.</u>
<i>Myotis macropus</i> Southern Myotis	Vulnerable	-	The Southern Myotis is found in the coastal band from the north-west of Australia, across the top-end, and south to western Victoria. It is rarely found more than 100 km inland, except along major rivers. The species roosts close to water in caves, mine shafts, hollow-bearing trees, storm water channels, buildings, wharves, bridges, and in dense foliage. Colonies occur close to water bodies, ranging from rainforest streams to large lakes and reservoirs. The species is dependent on waterways (i.e. medium to large permanent creeks, rivers, lakes, or other waterways with pools/stretches 3 m wide or greater ²²), where it catches aquatic insects and small fish with their large hind claws, and also catches flying insects. The TBDC lists 'Waterbodies with permanent pools/stretches 3m or wider, including rivers, large creeks, billabongs, lagoons, estuaries, dams and other, on or within 200m of the site' as habitat constraints for this species.	No – habitat constraint	The subject land does not contain potential habitat for this species (i.e. waterbodies). <u>Conclusion – the subject land lacks the habitat constraints required for this species.</u>
<i>Ninox connivens</i> Barking Owl	Vulnerable	-	This species inhabits woodland and open forest, including fragmented remnants and partly cleared farmland. During nesting season, the male perches in a nearby tree overlooking the hollow entrance. Two or three eggs are laid in hollows of large, old trees. Living eucalypts are preferred though dead trees are also used. Nest sites are used repeatedly over years by a pair. Nesting occurs during mid-winter and spring, being variable between pairs and among years. As a rule of thumb, laying occurs during August and fledging in November. The female incubates for 5 weeks, roosts outside the hollow when chicks are 4 weeks old, then fledging occurs 2-3 weeks later. The TBDC lists 'living or dead trees with hollows greater than 20 cm diameter and greater than 4 m above the ground' as a habitat constraint for this species.	No – habitat constraint	The subject land does not contain potential habitat for this species (i.e. trees with hollows > 20 cm that occur > 4 m above the ground). <u>Conclusion – the subject land lacks the habitat constraints required for this species.</u>
<i>Ninox strenua</i> Powerful Owl	Vulnerable	-	The Powerful Owl inhabits a range of vegetation types, from woodland and open sclerophyll forest to tall open wet forest and rainforest. The species requires large tracts of forest or woodland habitat but can occur in fragmented landscapes as well. Powerful Owls nest in large tree hollows (at least 0.5 m deep), in large eucalypts (diameter at breast height of 80-240 cm) that are at least 150 years old. While the female and young are in the nest hollow the male Powerful Owl roosts nearby (10-200 m) guarding them, often choosing a dense "grove" of trees that provide concealment from other birds that harass him. The TBDC lists 'living or dead trees with hollow greater than 20 cm diameter' as a habitat constraint.	No – habitat constraint	The subject land does not contain potential habitat for this species (i.e. trees with hollows > 20 cm that occur > 4 m above the ground). <u>Conclusion – the subject land lacks the habitat constraints required for this species.</u>

²² Anderson, J., Law, B., and Tidemann (2005). *Stream use by the Large-footed Myotis Myotis Macropus in relation to environmental variables in Northern New South Wales*. Australian Mammalogy 28:15-26.

Species	NSW (BC Act) listing status	National (EPBC Act) listing status	Habitat requirements	Presence	Justification for exclusion
<i>Petauroides volans</i> Southern Greater Glider	Endangered	Endangered	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.	No – microhabitat features	The subject land does not support tall, montane, or moist eucalypt forest with relatively old trees and abundant hollows, nor does it support a high diversity of eucalypts species. The subject land therefore lacks the primary microhabitat features required to support the species. <u>Conclusion – the species is considered unlikely to occur in the subject land.</u>
<i>Petaurus norfolcensis</i> Squirrel Glider	Vulnerable	-	West of the Great Diving Range, this species inhabits mature or old growth Box, Box-Ironbark woodlands, and River Red Gum forest. It prefers mixed species stands with a shrub or Acacia midstorey. The species requires abundant tree hollows for refuge and nest sites and generally relies on large old trees with hollows for breeding and nesting. These trees are also critical for movement and typically need to be closely connected (i.e. no more than 50 m apart). The TBDC lists ‘Loss of hollow-bearing trees’ and ‘Loss of understorey food resources’ as some of the key threats to this species.	No – microhabitat features, habitat degraded	Almost the entire subject land has been historically cleared. As a result, the spacing between remnant trees is large and canopy cover is very low. The midstorey and shrubstorey are entirely absent. As such, the subject land lacks the primary microhabitat features required for this species. The habitat is therefore degraded to the extent that the species is unlikely to utilise the subject land. <u>Conclusion – the species is considered unlikely to occur in the subject land.</u>
<i>Petrogale penicillata</i> Brush-tailed Rock-wallaby	Endangered	Vulnerable	The species occupies rocky escarpments, outcrops, and cliffs with a preference for complex structures with fissures, caves and ledges, often facing north. Brush-tailed Rock-wallaby browse on vegetation in and adjacent to rocky areas, eating grasses and forbs as well as the foliage and fruits of shrubs and trees. They are highly territorial and have strong site fidelity with an average home range size of about 15 ha; males tend to have larger home ranges than females. The home range consists of a refuge area and a foraging range linked by habitually used commuting routes. The TBDC lists ‘Land within 1 km of rocky escarpments, gorges, steep slopes, boulder piles, rock outcrops or clifflines’ as a habitat constraint for this species.	No – habitat constraint	The subject land is not within 1 km of rocky escarpments, gorges, steep slopes, boulder piles, rock outcrops or clifflines <u>Conclusion – the subject land lacks the habitat constraints required for this species.</u>
<i>Phascogale tapoatafa</i> Brush-tailed Phascogale	Vulnerable	-	The Brush-tailed Phascogale has a patchy distribution around the coast of Australia. In NSW it is mainly found east of the Great Dividing Range although there are occasional records west of the divide. This species prefers dry sclerophyll open forest with sparse groundcover of herbs, grasses, shrubs or leaf litter. It also inhabits heath, swamps, rainforest, and wet sclerophyll forest. It is an agile climber foraging preferentially in rough barked trees of 25 cm DBH or greater. The species nests and shelters in tree hollows with entrances 2.5 – 4 cm wide and uses many different hollows over a short time span. The TBDC lists ‘Loss of hollow-bearing trees’ and ‘Predation by foxes and cats’ as some of the key threats to this species.	No – microhabitat features, habitat degraded	The subject land does not support heath, swamps, rainforest, or wet sclerophyll forest. Almost all of the original woody vegetation (overstorey, midstorey, and shrubstorey) has been historically cleared across the subject land. The dry sclerophyll areas which retain an overstorey have undergone substantial modification and lack a number of the expected structural growth forms for the PCT. The subject land therefore lacks the primary microhabitat features required for this species. The habitat is therefore degraded to the extent that the species is unlikely to utilise the subject land. <u>Conclusion – the species is considered unlikely to occur in the subject land.</u>
<i>Phascolarctos cinereus</i> Koala	Endangered	Endangered	This species inhabits eucalypt woodlands and forests, feeding on the foliage of more than 70 eucalypt species and 30 non-eucalypt species. Home range size varies with quality of habitat, ranging from less than 2 hectares to several hundred hectares in size. The TBDC lists ‘Presence of koala use trees - refer to the Koala (<i>Phascolarctos cinereus</i>): Biodiversity Assessment Method Survey Guide for information on targeted survey requirements and mapping species polygons’ as a habitat constraint for breeding for this species.	No – habitat degraded	Low density Koala populations are known to occur in the dense and relatively intact vegetation that extends from Cuumbeun / Googong to Tinderry Nature Reserve and further south. However, almost the entire subject land has been historically cleared. As a result, the remaining mature remnant trees are scattered and isolated and the midstorey and shrubstorey are entirely absent. The habitat is therefore degraded to the extent that the species is unlikely to occur. Finally, the species has not been recorded in the Googong Township over multiple years of survey ²³ . The degraded nature of the habitat and lack of Koala records in Googong Township indicates that the subject land is unlikely to support the species. <u>Conclusion – the species is considered unlikely to occur in the subject land.</u>

²³ Biosis (2014), Biosis (2015a), Biosis (2015b), Capital Ecology (2016), Capital Ecology (2017b), Capital Ecology (2019a), and Capital Ecology (2021).

Species	NSW (BC Act) listing status	National (EPBC Act) listing status	Habitat requirements	Presence	Justification for exclusion
<i>Pomaderris pallida</i> Pale Pomaderris	Vulnerable	Vulnerable	Pale Pomaderris has been recorded from near Kydra Trig (north-west of Nimmitabel), Tinderry Nature Reserve, the Queanbeyan River (near Queanbeyan), the Shoalhaven River (between Bungonia and Warri), the Murrumbidgee River west of the ACT and the Byadbo area in Kosciuszko National Park. It is also found along the Murrumbidgee River in the ACT and has been recently recorded in eastern Victoria. This species usually grows in shrub communities surrounded by Brittle Gum (<i>Eucalyptus mannifera</i>) and Red Stringybark (<i>E. macrorhyncha</i>) or <i>Callitris spp.</i> woodland. The BAM Calculator lists 'South of Queanbeyan' as a geographic limitation for this species.	No – surveyed	The species was not recorded during targeted surveys. <u>Conclusion – the species is considered unlikely to breed in the subject land.</u>
<i>Prasophyllum petilum</i> Tarengo Leek Orchid	Endangered	Endangered	The Tarengo Leek Orchid occurs on relatively fertile soils in grassy woodland or natural grassland. The species is intolerant of grazing and this is considered to be the key reason it has been found only within cemeteries and Travelling Stock Routes, land from which grazing has been restricted.	No – habitat degraded	This species is highly intolerant of grazing, and the subject land has been grazed over an extended period. In addition, other ecological studies ²⁴ of the immediate surrounds have not recorded this species. It is likely that the habitat in the subject land has been degraded to the extent that the species is unlikely to occur. <u>Conclusion – the species is considered unlikely to occur in the subject land.</u>
<i>Pteropus poliocephalus</i> Grey-headed Flying-fox (Breeding)	Vulnerable	Vulnerable	Roosting camps are generally located within 20 km of a regular food source and are commonly found in gullies, close to water, in vegetation with a dense canopy. Individual camps may have tens of thousands of animals and are used for mating, and for giving birth and rearing young. Site fidelity to camps is high; some camps have been used for over a century. The TBDC lists 'breeding camps' as a breeding habitat constraint for this species.	No – habitat constraint	While the species is likely to visit the subject land occasionally to forage, field surveys confirmed that the subject land does not support breeding camps. <u>Conclusion – the subject land lacks the breeding habitat constraints required for this species.</u>
<i>Rutidosia leptorrhynchoidea</i> Button Wrinklewort	Endangered	Endangered	This species occurs in Box-Gum Woodland, secondary grassland derived from Box-Gum Woodland, or in Natural Temperate Grassland. It often occurs in the ecotone between Box-Gum Woodland and Natural Temperate Grassland. The species grows on soils that are usually shallow, stony red-brown clay loams and tends to occupy areas where there is relatively less competition from herbaceous species (either due to the shallow nature of the soils, or at some sites due to the competitive effect of woodland trees). It exhibits an ability to colonise disturbed areas (e.g. vehicle tracks, bulldozer scrapings and areas of soil erosion). The species is apparently susceptible to grazing, being retained in only a small number of populations on roadsides, rail reserves, and other un-grazed or very lightly grazed sites. Some of the main threats to this species listed in the TBDC are: 1) loss and degradation of habitat and/or populations by intensification of grazing regimes; 2) loss and degradation of habitat and/or populations by invasion of weeds; and 3) increased competition from other native grassland species within the habitat because of adverse increases of biomass due to absence of fire or grazing and the resultant closing up of the inter-tussock spaces that this species requires.	No – habitat degraded	This species is intolerant of grazing, and the subject land has been grazed over an extended period. In addition, other ecological studies ²⁵ of the immediate surrounds have not recorded this species. It is likely that the habitat in the subject land has been degraded to the extent that the species is unlikely to occur. <u>Conclusion – the species is considered unlikely to occur in the subject land.</u>

²⁴ Biosis (2014), Biosis (2015a), Biosis (2015b), Capital Ecology (2016), Capital Ecology (2017b), Capital Ecology (2019a), Capital Ecology (2021).

²⁵ Biosis (2014), Biosis (2015a), Biosis (2015b), Capital Ecology (2016), Capital Ecology (2017b), Capital Ecology (2019a), Capital Ecology (2021).

Species	NSW (BC Act) listing status	National (EPBC Act) listing status	Habitat requirements	Presence	Justification for exclusion
<i>Swainsona recta</i> Small Purple-pea	Endangered	Endangered	Before European settlement, Small Purple-pea occurred in the grassy understorey of woodlands and open-forests dominated by Blakely's Red Gum <i>E. blakelyi</i> , Yellow Box <i>E. melliodora</i> , Candlebark Gum <i>E. rubida</i> , and Long-leaf Box <i>E. goniocalyx</i> . It grows in association with understorey dominants that include Kangaroo Grass <i>Themeda australis</i> , Poa tussocks <i>Poa</i> spp. and Speargrasses <i>Austrostipa</i> spp.. Some of the main threats to this species listed in the TBDC are: 1) grazing and trampling by cattle, sheep, and goats; and 2) loss, degradation, and fragmentation of habitat and/or populations for residential developments, agricultural developments, and by weed invasion (including exotic grasses mostly, as well as bridal creeper and St John's wort).	No – habitat degraded	This species is highly intolerant of grazing, and the subject land has been grazed over an extended period. In addition, other ecological studies ²⁶ of the immediate surrounds have not recorded this species. It is likely that the habitat in the subject land has been degraded to the extent that the species is unlikely to occur. <u>Conclusion – the species is considered unlikely to occur in the subject land.</u>
<i>Swainsona sericea</i> Silky Swainson-pea	Vulnerable	-	This species is found in Natural Temperate Grassland and Snow Gum <i>Eucalyptus pauciflora</i> Woodland on the Monaro, and in Box-Gum Woodland in the Southern Tablelands and South West Slopes. It is sometimes found in association with Cypress-pines <i>Callitris</i> spp.. Some of the main threats to this species listed in the TBDC are loss and degradation of habitat and/or populations for: 1) residential developments; 2) invasion of weeds; 3) intensification of grazing regimes; and 4) agricultural developments.	No – habitat degraded	This species is intolerant of grazing, and the subject land has been grazed over an extended period. In addition, other ecological studies ²⁷ of the immediate surrounds have not recorded this species. It is likely that the habitat in the subject land has been degraded to the extent that the species is unlikely to occur. <u>Conclusion – the species is considered unlikely to occur in the subject land.</u>
<i>Synemon plana</i> Golden Sun Moth	Vulnerable	Vulnerable	The species occurs in Natural Temperate Grasslands and grassy Box-Gum Woodlands in which the groundlayer is dominated by Wallaby grasses <i>Rhynchospora</i> spp.. Grasslands dominated by Wallaby grasses are typically low and open and the bare ground between the tussocks is thought to be an important microhabitat feature for the Golden Sun Moth as it is typically these areas on which the females are observed displaying to attract males. Habitat may contain several Wallaby grass species, which are typically associated with other grasses particularly Speargrasses <i>Austrostipa</i> spp. or Kangaroo Grass <i>Themeda australis</i> . The TBDC lists 'Wallaby grass (<i>Rhynchospora</i> sp), Speargrass (<i>Austrostipa</i> sp) or Chilean needlegrass (<i>Nassella neesiana</i>)' as a habitat constraint. Some of the main threats to this species listed in the TBDC are loss and degradation of habitat by urban, residential, infrastructure, and agricultural development, modifications to agricultural practices (e.g. fertiliser application, ploughing, and inappropriate grazing), overgrazing by domestic stock, and invasive grasses.	No	As part of the BCAR, Golden Sun Moth surveys were carried out across NH3-5, which included the subject land for this BDAR. Surveys were conducted during ideal conditions when the species was observed to be flying strongly and in good numbers. No Golden Sun Moth were recorded. <u>Conclusion – the species is considered unlikely to occur in the subject land.</u>

²⁶ Biosis (2014), Biosis (2015a), Biosis (2015b), Capital Ecology (2016), Capital Ecology (2017b), Capital Ecology (2019a), Capital Ecology (2021).

²⁷ Biosis (2014), Biosis (2015a), Biosis (2015b), Capital Ecology (2016), Capital Ecology (2017b), Capital Ecology (2019a), Capital Ecology (2021).

2.3.4.2 BAM targeted survey results

As noted in Table 14, the majority of the flora and fauna species flagged by the BAM as potentially occurring in the subject land are considered highly unlikely to occur given the condition of the vegetation and habitat combined with the history of disturbance, in particular the clearance of woody vegetation and prolonged period of high intensity stock grazing. This assertion is supported by previous surveys of the subject land and wider Googong Township, all of which indicate that the subject land does not support habitat for threatened flora or fauna.

Threatened Flora

Targeted surveys for a limited number of threatened flora were completed to confirm the occurrence and/or habitat potential for these species (Figure 9).

None of the identified threatened flora species credit species were recorded in the subject land. Given the history of disturbance, in particular the clearance of woody vegetation and prolonged period of high intensity stock grazing, no threatened flora species are considered likely to occur in the subject land.

Threatened Birds

Nesting surveys for threatened raptors were completed during the remnant tree assessment to confirm the occurrence and/or habitat potential for these species (Figure 9). No large stick nests were recorded in the subject land (Appendix C). As such, no threatened raptor species are considered likely to be currently breeding in the subject land.

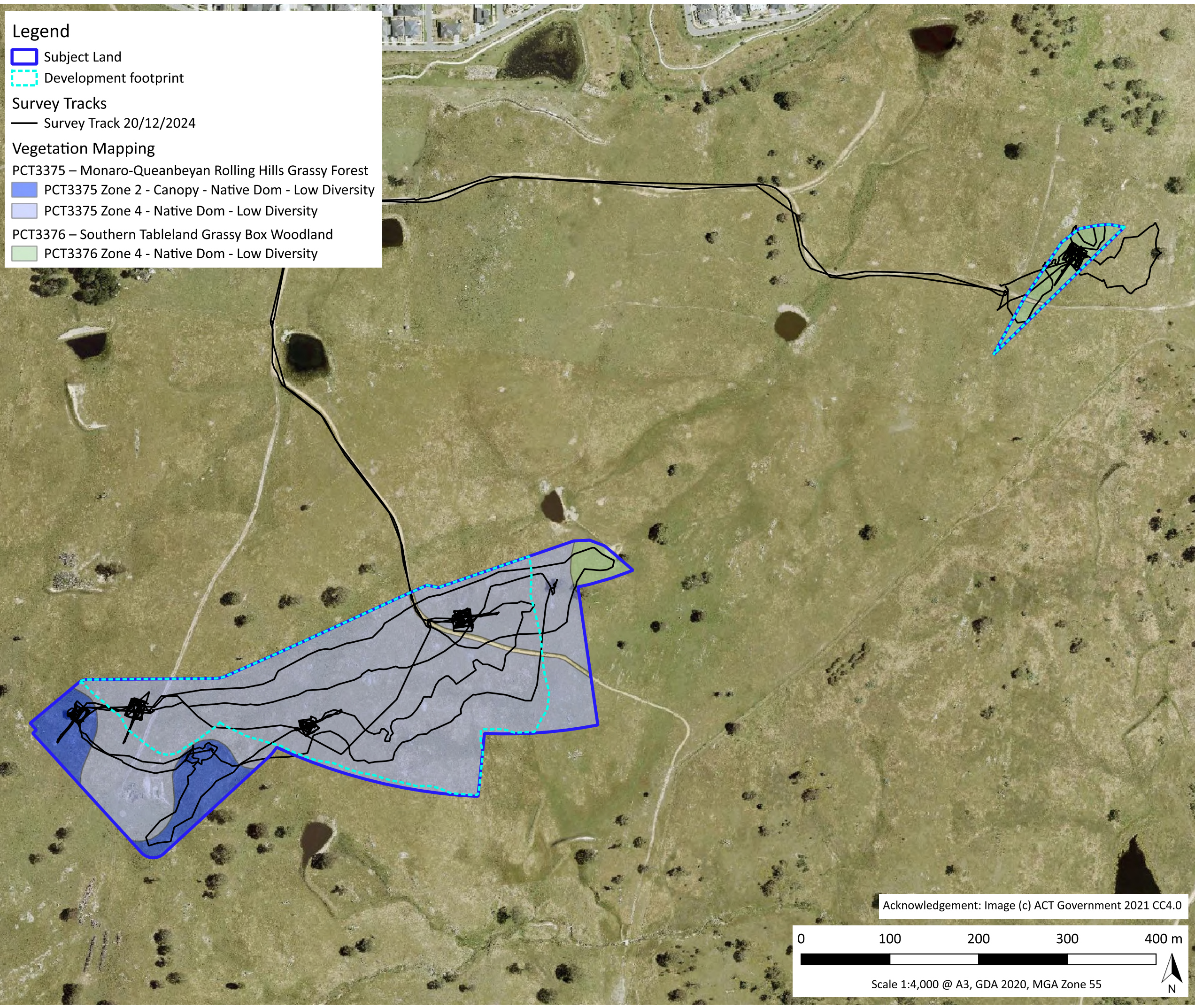


Figure 9. Threatened Species Survey

Capital Ecology Project No: 3365
Drawn by: S. Reid
Date: 2 April 2025

Acknowledgement: Image (c) ACT Government 2021 CC4.0



3 Part 2 – Impact Assessment (BAM Stage 2)

Part 2 of this BDAR provides an assessment of the impacts of the proposed development as set out in Stage 2 of the BAM.

3.1 Avoidance and Minimisation of Impacts on Biodiversity Values

In accordance with the BAM, a proponent is required to demonstrate that all reasonable and practicable measures have been employed to avoid and minimise the impacts of a project on biodiversity values. Accordingly, this section outlines the avoidance and minimisation measures that have been incorporated into the project design of the proposed development.

3.1.1 Location

3.1.1.1 Iterative design process

The design of the proposed development has gone through an iterative design process. This was undertaken specifically to minimise impacts on ecological values. Initially, the entire subject land was proposed for development. However, following consultation with NSW DCCEW, a number of design options were developed and considered. As discussed in the following sections, the chosen design as presented in this BDAR was selected as it minimised impacts to the key remaining ecological values, being the higher quality PCT3373 Zone 2 (VI = 27.2) and four remnant trees. As a result of this iterative design process, the development footprint reduced from 11.20 ha to 7.38 ha, which represents a reduction of approximately 35%.

3.1.1.2 Locating the project where there are low or no biodiversity values

The majority of the subject land has been substantially modified by its current and past land use, which has primarily been livestock grazing. This has led to extensive clearing of the native woody overstorey, midstorey, and shrubstorey across the vast majority of the subject land (leaving four scattered remnant trees) and has resulted in a low diversity native groundstorey. As noted in Section 3.1.1.1, the design of the development footprint was further modified to avoid the key remaining ecological values, being the higher quality PCT3373 Zone 2 (VI = 27.2) and four remnant trees. As a result, the proposed development will only impact low diversity native pasture that does not support habitat for any threatened species. The proposed development has therefore been located in an area that lacks significant biodiversity values.

3.1.1.3 Locating the proposal in areas where the native vegetation or threatened species habitat is in the poorest condition (i.e. areas that have a low vegetation integrity score)

As noted in Section 3.1.1.1, the design of the development footprint was modified to avoid the key remaining ecological values, being the higher quality PCT3373 Zone 2 (VI = 27.2) and four remnant trees. As a result, the future development of the subject land will only impact low diversity native pasture (PCT3375 Zone 4 [VI = 15.5], PCT3376 Zone 4 [VI = 11.5]) that does not support habitat for any threatened species. The proposed development has therefore been located in an area where the native vegetation and threatened species habitat is in the poorest condition.

3.1.2 Design

3.1.2.1 Reducing the clearing footprint of the project

As noted in Section 3.1.1.1, the design of the proposed development was altered to minimise impacts to the key remaining ecological values, being the higher quality PCT3373 Zone 2 (VI = 27.2) and four remnant trees. As a result of this design process, the development footprint reduced from 11.20 ha to 7.38 ha, which represents a reduction of approximately 35%.

3.1.2.2 Locating ancillary facilities in areas: where there are no biodiversity values; where the native vegetation or threatened species habitat is in the poorest condition; and that avoid habitat for species and vegetation in high threat status categories

Given that the subject land is located adjacent to the future Googong Township NH3-5, many of the biodiversity impacts associated with a new development will be reduced (i.e. impacts related to services, roads, bushfire protection, flood planning, etc.). In addition, all ancillary facilities associated with the construction and operation of the future development will be located to avoid the significant biodiversity values in the wider landscape.

3.1.2.3 Making provision for the demarcation, ecological restoration, rehabilitation and/or ongoing maintenance of retained native vegetation and habitat

As part of the Biodiversity Certification process, a **Vegetation Management Plan (VMP)**²⁸ was developed to manage the 'Avoided Land' to the south of the subject land (refer to Figure 3). The retained 3.82 ha within the subject land, which includes the higher quality PCT3373 Zone 2 (VI = 27.2) and four remnant trees, will be managed in accordance with the VMP, thereby providing for its in-perpetuity retention, protection, and management.

3.2 Residual Biodiversity Impacts of the Proposed Development

3.2.1 Direct impacts on native vegetation and habitat

As shown in Figure 10, the proposed development will result in the following direct impacts.

- Clearance of 6.83 ha of PCT3375 Zone 4.
- Clearance of 0.44 ha of PCT3376 Zone 4 (low condition BC Act Box-Gum Woodland).

In total, the proposed development will clear 7.27 ha of BC Act native vegetation, which includes 0.44 ha of low condition BC Act Box-Gum Woodland. The proposed development will not result in any other direct impacts on native vegetation or flora/fauna habitat.

3.2.2 Indirect impacts on native vegetation and habitat

The proposed development has the potential to indirectly impact retained or adjacent native vegetation and habitat. Potential indirect impacts are listed below.

- Increased sedimentation of receiving waterways during construction.
- Increased noise, vibration, and dust during construction.

²⁸ Capital Ecology (2022). *Biodiversity Certification, Googong Township, NSW – Vegetation Management Plan*. Final 02 – 23 February 2022. Prepared for Googong Township Pty Ltd. Author: S. Reid and R. Speirs. Project no. 2820.

- Weed introduction and/or spread during construction and occupation.
- Incidental damage or removal of retained native vegetation and habitat during construction and occupation.
- Increase in pest animal populations as a result of increased human activity during occupation.

The above potential indirect impacts could occur during the construction and/or occupation of the subject land and may reduce the extent and/or condition of the surrounding native vegetation and habitat. This may occur in the short-term during the construction phase of the proposed development and in the long-term during the occupation phase of the proposed development.

However, the proposed development reduces the likelihood of indirect impacts by enacting the following principles detailed in Section 3.1 to avoid and minimise impacts to native vegetation and habitat.

- Locating the project where there are low or no biodiversity values.
- Locating the proposal in areas where the native vegetation or threatened species habitat is in the poorest condition (i.e. areas that have a low vegetation integrity score)
- Reducing the clearing footprint of the project.
- Locating ancillary facilities in areas: where there are no biodiversity values; where the native vegetation or threatened species habitat is in the poorest condition; and that avoid habitat for species and vegetation in high threat status categories.
- Making provision for the demarcation, ecological restoration, rehabilitation and/or ongoing maintenance of retained native vegetation and habitat.

In addition, potential indirect impacts will be minimised and mitigated during construction by the measures outlined in Section 3.3, and during occupation by the measures outlined in Section 3.1 and Section 3.3. These measures:

- control potential sedimentation of receiving waterways during construction;
- control noise, vibration, and dust spill during construction;
- control weed introduction and/or spread during construction and occupation;
- control incidental damage and removal of retained native vegetation and habitat during construction and occupation; and
- control pest animal populations as a result of increased human activity during occupation.

In combination, the above measures are considered sufficient to reduce the risk of indirect impacts to an acceptably low level. As such, the proposed development is unlikely to result in any indirect impacts on native vegetation or habitat.

3.2.3 Prescribed biodiversity impacts

As described in the BAM, some types of projects may have impacts on biodiversity values in addition to, or instead of, impacts from clearing vegetation and/or loss of habitat. For many of these impacts the biodiversity values may be difficult to quantify, replace or offset, making avoiding and

minimising impacts critical. Clause 6.1 of the BC Regulation identifies the following as impacts that are 'prescribed biodiversity impacts' that must be assessed using the BOS.

(a) impacts of development on the habitat of threatened species or ecological communities associated with:

(i) karst, caves, crevices, cliffs and other geological features of significance;

(ii) rocks;

(iii) human made structures;

(iv) non-native vegetation;

(b) impacts of development on the connectivity of different areas of habitat of threatened species that facilitates the movement of those species across their range;

(c) impacts of development on movement of threatened species that maintains their life cycle;

(d) impacts of development on water quality, water bodies and hydrological processes that sustain threatened species and threatened ecological communities (including from subsidence or upsidence resulting from underground mining);

(e) impacts of wind turbine strikes on protected animals; and

(f) impacts of vehicle strikes on threatened species or on animals that are part of a TEC.

No potential 'prescribed biodiversity impacts' due to the proposed development were identified during the development of this BDAR.

3.3 Mitigation of Residual Impacts on Biodiversity Values

The following mitigation techniques will be implemented to address the residual impacts on biodiversity values during and after the construction and operation phases of the proposed development. In combination, these mitigation measures are considered sufficient to reduce the risk of residual impacts to an acceptably low level.

3.3.1 Construction

A Construction Environmental Management Plan (CEMP) will be developed to guide the proposed development from before construction commences and until construction is completed. At a minimum the CEMP will include:

- clearing procedures;
- weed management procedures;
- sediment and erosion controls to prevent site run-off;
- noise, vibration, and dust control;
- flow controls;
- pollution and waste management;
- water treatment standards before release; and
- monitoring, reporting, and compliance requirements.

All retained vegetation and remnant trees will be protected in accordance with the Australian Standard²⁹.

Best practice sediment and erosion control, such as the use of sediment traps, sediment interception ponds, silt fences and haybale fences, will be implemented as required during construction to minimise the flow of water and associated material into the surrounding areas and water sources.

3.3.2 Construction and Occupation

As mentioned in Section 3.1.2.3, the retained 3.82 ha within the subject land, which includes the higher quality PCT3373 Zone 2 (VI = 27.2) and four remnant trees, will be managed in accordance with the VMP, thereby providing for its in-perpetuity retention, protection, and management.

In addition to the above, the entire subject land falls within the **Googong Foreshore Interface Management Strategy (GFIMS)**³⁰ Management Area. The GFIMS Management Area borders the Googong Foreshores and provides a managed buffer of least 150 m to the significant ecological values in the Googong Foreshores. In summary, the GFIMS sets out all of the actions required to manage the GFIMS Management Area, including (but not limited to) the following.

- Details pertaining to the GFIMS Management Area 'concept' (principles, benefits, key potential impacts, spatial design and location, management areas and schedule for establishment).
- A description of the restoration (weed removal and revegetation) measures that will be undertaken within the GFIMS Management Area.
- Details pertaining to the protection and maintenance measures that will be implemented to protect the values of both the GFIMS Management Area and Googong Foreshores.
- The framework for the Environmental Education Program that will be developed by GTPL to educate residents of Googong Township and the broader public regarding the importance of protecting the Googong Reservoir catchment and the significant natural and cultural heritage values of the Googong Foreshores and the GFIMS Management Area.
- Details pertaining to the implementation, annual monitoring and review, and the associated adaptive management of the GFIMS Management Area.

In combination, the GFIMS and VMP outline in detail the actions required to protect, restore, rehabilitate, maintain, and manage the retained native vegetation and habitat in the subject land.

3.3.3 Mitigating residual prescribed biodiversity impacts

As detailed in Section 3.2.3, the proposed development is unlikely to result in any prescribed biodiversity impacts and therefore dedicated mitigation measures are not required.

Notwithstanding this, the avoidance and minimisation measures detailed in Section 3.1 and the mitigation measures detailed in Section 3.3 will reduce the impact of the proposed development.

²⁹ Standards Australia (2009) *Australian Standard. Protection of trees on development sites*. <https://www.tcaa.com.au/wp-content/uploads/2018/11/AS-4970-2009-Protection-of-trees-on-development-sites.pdf>

³⁰ Biosis (2014). *Googong Foreshores Interface Management Strategy – Version 3*. Prepared for Googong Township Pty Ltd. Author: R. Speirs, Biosis Pty Ltd, Canberra. Download [here](#).

3.3.4 Adaptive management for uncertain impacts

As per the BAM, an adaptive management strategy is required for impacts on biodiversity values that are infrequent or difficult to measure prior to commencement of the proposed development. Such impacts are referred to as uncertain impacts. If uncertain impacts are identified, the proponent must develop an adaptive management strategy.

The proposed development is unlikely to result in biodiversity impacts that are unforeseen or uncertain, especially given that:

- the subject land does not support karst, caves, crevices, cliffs and other geological features of significance;
- the proposed development does not include underground mining;
- the proposed development does not include wind turbines; and
- the proposed development is unlikely to substantively increase the incidence of vehicle strikes.

As such, an adaptive management strategy is not required for the proposed development.

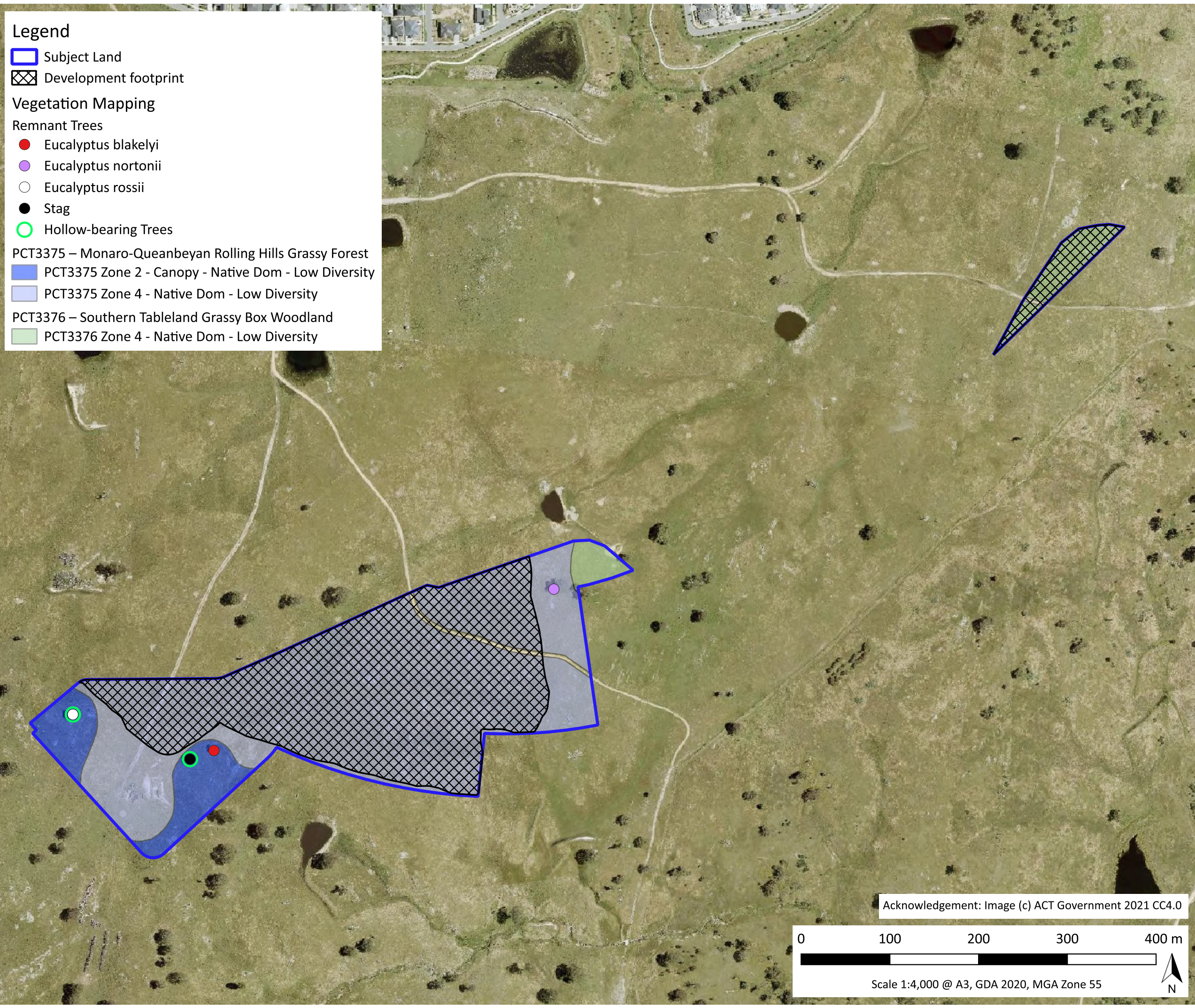


Figure 10. Residual Impacts of the Proposed Development

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Drawn by: S. Reid
Date: 2 April 2025



3.4 Serious and Irreversible Impacts

The guidance to assist a decisionmaker to determine a serious and irreversible impact (NSW Government 2019³¹) provides a list of threatened species and ecological communities which are likely to be the subject of serious and irreversible impacts (SAIL). The potential for a project to impact these SAIL entities must be assessed in the BDAR.

The subject land supports the following listed ecological community which is listed as an SAIL entity.

- PCT3376 - 'Southern Tablelands Grassy Box Woodland' (BC Act Box-Gum Woodland)

The proposed development will result in the removal of a total of 0.44 ha of low condition BC Act Box-Gum Woodland. The below additional information is provided to support the decision maker to determine if the proposed clearance of 0.44 ha of low condition BC Act Box-Gum Woodland constitutes a SAIL.

3.4.1 Box-Gum Woodland

The following information is presented according to the requirements outlined in Section 10.2 of the BAM and has been informed by the following databases and documents.

- NSW Government Saving Our Species (SOS) profile³² and project report³³.
- *Final Determination: White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland*. Gazetted 17 July 2020 (NSW Threatened Species Scientific Committee 2020a).
- *Notice of and reason for the Final Determination* (NSW Threatened Species Scientific Committee 2020b³⁴).
- *Conservation Assessment of White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland* (NSW Threatened Species Scientific Committee 2020c³⁵).
- NSW Government Office of Environment & Heritage White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland profile³⁶.
- *ACT native woodland conservation strategy and action plans* (ACT Government 2019³⁷).
- *Approved Conservation Advice for the White Box – Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland* (DCCEEW 2023).

³¹ NSW Government (2019). *Guidance to assist a decision-maker to determine a serious and irreversible impact*. State of New South Wales and Department of Climate Change, Energy, the Environment, and Water. <https://www.environment.nsw.gov.au/topics/animals-and-plants/biodiversity-offsets-scheme/local-government-and-other-decision-makers/serious-and-irreversible-impacts-of-development>

³² <https://www.environment.nsw.gov.au/savingourspeciesapp/project.aspx?ProfileID=10837>

³³ <https://www.environment.nsw.gov.au/savingourspeciesapp/ViewFile.aspx?ReportProjectID=988&ReportProfileID=10837>

³⁴ NSW Threatened Species Scientific Committee (2020b), *Notice of and reason for the Final Determination*.

³⁵ NSW Threatened Species Scientific Committee (2020c). *Conservation Assessment of White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland*.

³⁶ <https://www.environment.nsw.gov.au/threatenedSpeciesApp/profile.aspx?id=10837>

³⁷ ACT Government (2019). *ACT native woodland conservation strategy and action plans*. Environment, Planning and Sustainable Development.

- *White box - Yellow box - Blakely's red gum grassy woodlands and derived native grasslands* (Commonwealth of Australia 2006³⁸).
- *National Recovery Plan for White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland* (Commonwealth of Australia 2010³⁹).

3.4.1.1 Box-Gum Woodland – SAI additional information

1. *the action and measures taken to avoid the direct and indirect impact on the TEC at risk of an SAI*

The proposed development enacts the principles detailed in Section 3.1 to avoid and minimise impacts to Box-Gum Woodland. Potential indirect impacts, including indirect impacts to BC Act Box-Gum Woodland, will be minimised and mitigated by the measures outlined in Section 3.3.

2. *The current status of the TEC including:*

- a. *evidence of reduction in geographic distribution (Principle 1, clause 6.7(2)(a) BC Regulation) as the current total geographic extent of the TEC in NSW and estimated reduction in geographic extent of the TEC since 1970 (not including impacts of the proposal).*
- b. *extent of reduction in ecological function for the TEC using evidence that describes the degree of environmental degradation or disruption to biotic processes (Principle 2, clause 6.7(2)(b) BC regulation) indicated by:*
 - i. *change in community structure*
 - ii. *change in species composition*
 - iii. *disruption of ecological processes*
 - iv. *invasion and establishment of exotic species*
 - v. *degradation of habitat, and*
 - vi. *fragmentation of habitat*
- c. *evidence of restricted geographic distribution (Principle 3, clause 6.7(2)(c) BC Regulation), based on the TEC's geographic range in NSW according to the*
 - i. *Extent of occurrence*
 - ii. *Area of occupancy, and*
 - iii. *Number of threat-defined locations*

³⁸ Commonwealth of Australia (2006). *White box - Yellow box - Blakely's red gum grassy woodlands and derived native grasslands*. EPBC Act Policy Statements, Nationally threatened species and ecological communities.

³⁹ Commonwealth of Australia (2010). *National Recovery Plan for White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland*. Department of Environment, Climate Change and Water NSW, Sydney

d. evidence that the TEC is unlikely to respond to management (Principle 4, clause 6.7(2)(d) BC Regulation).

White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland is listed under the NSW BC Act as a Critically Endangered Ecological Community. It is considered to be an SAIL entity based on Principles 1 and 2⁴⁰. As stated in the Final Determination (NSW TSSC 2020b):

"White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland has undergone a very large reduction in geographic distribution. The Community has been extensively cleared throughout its range and remnants typically are small, isolated, highly fragmented, occur in predominantly cleared landscapes and exhibit highly modified understoreys (TSSC 2006). Based on a compilation of available maps depicting the current extent of the community, TSSC (2006) estimated that less than 5% of the original distribution remained, however the extent to which remaining examples continue to support characteristic biota, their interactions and function is unknown..."

...White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland is subject to a number of threatening processes that have caused severe declines in biotic processes and interactions throughout its range and are likely to cause continuing decline in the future."

3. Is the TEC 'Unknown' or 'Data deficient' for Principles 1 to 4?

The TEC is not data deficient.

4. in relation to the impacts from the proposal on the TEC at risk of an SAIL:

a. the impact on the geographic extent of the TEC (Principles 1 and 3) by estimating the total area of the TEC to be impacted by the proposal:

i. in hectares, and

ii. as a percentage of the current geographic extent of the TEC in NSW

The current geographic extent of the TEC in NSW varies widely between estimates. The following information was taken from the NSW TSSC Conservation Assessment of White Box-Yellow Box-Blakely's Red Gum Grass Woodland and Derived Native Grassland (NSW Threatened Species Scientific Committee 2020c):

- Former (pre-1750) extent in NSW = 3,717,366 ha.
- Current extent in NSW = 250,729 ha (93% cleared).

The proposed development will have a direct impact on 0.44 ha of low condition BC Act Box-Gum Woodland. This impact represents 0.0000017% of the total extent in NSW.

b. The extent that the proposed impacts are likely to contribute to further environmental degradation or the disruption of biotic processes (Principle 2) of the TEC by:

⁴⁰ <https://www.environment.nsw.gov.au/topics/animals-and-plants/biodiversity-offsets-scheme/local-government-and-other-decision-makers/serious-and-irreversible-impacts-of-development>

i. Estimating the size of any remaining, but now isolated, areas of the TEC; including areas of the TEC within 500m of the development footprint or equivalent area for other types of proposals

In total, the subject land was assessed as supporting 0.69 ha of low condition BC Act Box-Gum Woodland (i.e. PCT3376 Zone 4). The proposed development will have a direct impact on 0.44 ha of low condition BC Act Box-Gum Woodland. The proposed development will not impact any remnant trees or native midstorey / shrubstorey vegetation.

As shown in Figure 11, a 500 m buffer around the subject land contains approximately 23.09 ha⁴¹ of BC Act Box-Gum woodland. The areas to be cleared within the subject land are small patches of remnant vegetation that are not important from a habitat connectivity perspective.

ii. Describing the impacts on connectivity and fragmentation of the remaining areas of TEC measured by:

- **Distance between isolated areas of the TEC, presented as the average distance if the remnant is retained AND the average distance if the remnant is removed as proposed, and**

The average minimum distance between all patches of BC Act Box-Gum Woodland within 500 m of the subject land (including vegetation within the subject land, refer to Figure 11):

- if the remnant is retained = 135.11 m; and
- if the remnant is removed as proposed = 135.11 m.

The proposed development would therefore result in no change in the minimum distance between all patches of BC Act Box-Gum Woodland within 500 m of the subject land. This is because the impacted areas are on the edge of mapped polygons of Box-Gum Woodland.

Following completion of the proposed development, the remaining areas of BC Act Box-Gum Woodland will not be functionally isolated and are considered to be of a sufficient size to ensure the existing level of ecosystem function is not compromised (refer to Figure 11). The proposed development is therefore considered unlikely to further isolate retained and adjacent areas of the TEC.

- **Estimated maximum dispersal distance for native flora species characteristic of the TEC, and**

As noted previously, following completion of the proposed development the remaining areas of BC Act Box-Gum Woodland will not be functionally isolated and are considered to be of a sufficient size to ensure the existing level of ecosystem function is not compromised (refer to Figure 11). As a result, the proposed development is considered unlikely to impact the dispersal of any flora species characteristic of the TEC.

⁴¹ Box-Gum Woodland occurring in the 'Land Proposed for Certification' in Googong Township NH3-5 has been excluded from the 500 m buffer as clearance of these areas has been approved via the Biodiversity Certification (see Figure 11).

- **Other information relevant to describing the impact on connectivity and fragmentation, such as the area to perimeter ratio for remaining areas of the TEC as a result of the development**

The average area to perimeter ratio for all patches of BC Act Box-Gum Woodland within 500 m of the subject land (including vegetation within the subject land, refer to Figure 11):

- if the remnant is retained = 21.51; and
- if the remnant is removed as proposed = 20.99.

The proposed development would therefore result in an average decrease of 0.52 (2.4%) for the average area to perimeter ratio for all patches of native woody vegetation within 500 m of the subject land.

iii. Describing the condition of the TEC according to the vegetation integrity score for the relevant vegetation zones(s). Include the relevant composition, structure and function condition scores for each vegetation zone.

The proposed development will directly impact (i.e. remove) a total of 0.44 ha of low condition BC Act listed Box-Gum Woodland, composed of a single vegetation condition zone.

- PCT3376 Zone 4. Vegetation Integrity Score of 11.5 (composition 32.5, structure 46.7, and function 0.2). As described in Table 8, this zone is characterised as *“Overstorey and midstorey are absent. Low diversity native groundlayer dominated by disturbance tolerant native grasses. Low density of significant weed species. Grazed at the time of survey primarily by sheep and cattle”*

As described above, PCT3376 Zone 4 has been degraded by historic and current agricultural activities and only meets the definition of BC Act Box-Gum Woodland in its lowest possible condition state (i.e. low diversity native pasture).

Legend

Subject Land

Land Proposed for Certification

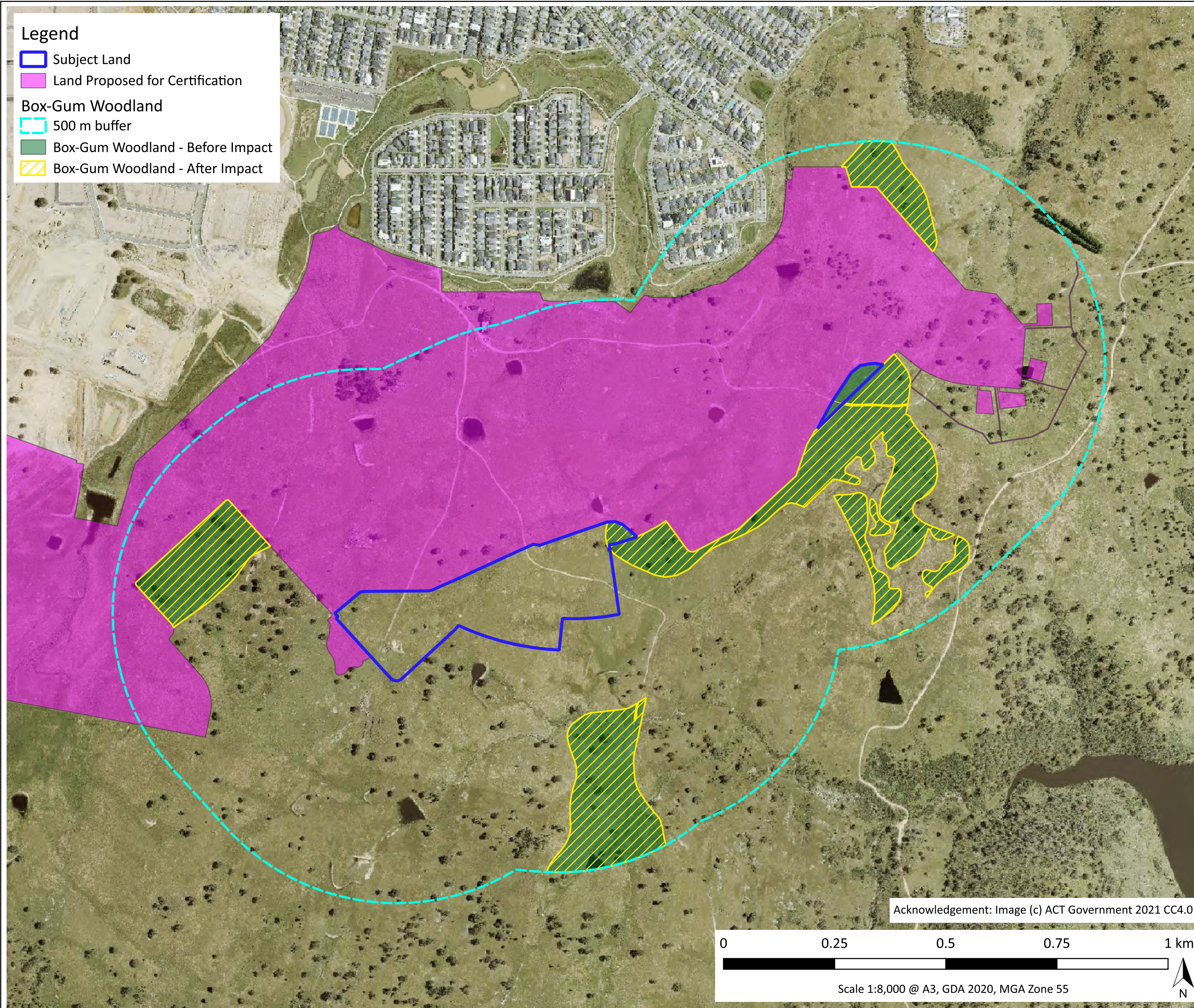
Box-Gum Woodland

500 m buffer

Box-Gum Woodland - Before Impact

Box-Gum Woodland - After Impact

Figure 11. SAI - Box-Gum Woodland within 500m of the Subject Land



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3.5 Legislative Requirements

3.5.1 Commonwealth EPBC Act – Referral

The proposed development is unlikely to have a significant impact on an EPBC Act listed MNES given the subject land does not:

- support any EPBC Act listed ecological communities;
- support any EPBC Act listed flora species; or
- contain habitat of potential importance to EPBC Act listed threatened or migratory fauna species.

In addition, the development of the majority of Googong Township was subject to a Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) referral (EPBC Act Ref:2011/5859) and corresponding EPBC Act approval. With respect to the subject land of this BDAR, all areas were included in the EPBC Act referral. Any development of the subject land must therefore occur in accordance with the EPBC Act approval and associated conditions

In light of the above, EPBC Act referral as a standalone action is not required.

3.5.2 NSW BC Act – Biodiversity Offset Requirements

The BAM Calculator is the tool for quantifying the offset requirements for a project, the output being expressed as ecosystem credits and species credits. The results of the BAM credit calculations completed for the proposed development are provided below and detailed in Appendix D.

3.5.2.1 Biodiversity risk weighting

The biodiversity risk weighting is a tool used in the BOS to mitigate the risk in offsetting the loss of vegetation, threatened entities and/or their habitat. The biodiversity risk weighting does this by increasing the quantum of credits required at an impact site. The biodiversity risk weighting is derived from two components:

- sensitivity to loss – based on threat status under legislation or evidence-based information that suggests the entity is at an increased risk of loss; and
- sensitivity to potential gain – based on life history characteristics and ecological information for a species.

The biodiversity risk rating associated with the PCTs within the subject land are shown below.

- PCT3375 – Biodiversity risk rating of 1.25.
- PCT3376 – Biodiversity risk rating of 2.00.

3.5.2.2 Ecosystem credit requirements

The results of the BAM credit calculations completed for the proposed development are provided in Table 15. As shown in Table 15, none of the impacted vegetation zones have a vegetation integrity score sufficient for their clearance to result in generation of ecosystem credits, these being vegetation zones that have a vegetation integrity score of:

- d) ≥ 15 , where the PCT is representative of an EEC or a CEEC

- e) ≥ 17 , where the PCT is associated with threatened species habitat (as represented by ecosystem credits) or represents a vulnerable ecological community
- f) ≥ 20 , where the PCT does not represent a TEC and is not associated with threatened species habitat.

Accordingly, the proposed development does not generate an ecosystem credit obligation.

Table 15. Ecosystem credit requirements.

PCT & Vegetation Zone	Vegetation Integrity Score	Proposed Clearance Area	Credits Required
PCT3375 Zone 4	15.5	6.83 ha	0
PCT3376 Zone 4	11.5	0.44 ha	0
Total			0

3.5.2.3 Species credit requirements

The subject land does not support habitat of potential significance to any species credit species. Accordingly, the proposed development does not generate a species credit obligation.

3.5.3 NSW Biodiversity and Conservation SEPP 2021– Koala Habitat Protection Requirements

Regarding the application of 'Chapter 4 Koala habitat protection 2021' of the *Biodiversity and Conservation SEPP 2021* for the proposed development of the subject land, the following points are noted.

- The subject land is located within the QPRC LGA, which is an LGA to which Chapter 4 applies as listed in Schedule 2.
- The subject land is zoned C2 – Environmental Conservation.
- There is no approved koala plan of management applying to the subject land.
- The subject land has an area of greater than 1 hectare.

Based on the above assessment, the development control provisions of Chapter 4 apply to the proposed development. Therefore –

Before a council may grant consent to a development application for consent to carry out development on the land, the council must assess whether the development is likely to have any impact on koalas or koala habitat.

If the council is satisfied that the development is likely to have low or no impact on koalas or koala habitat, the council may grant consent to the development application.

With regard to the above, the following points are noted.

- The proposed development will not impact any trees. Therefore, the proposed development cannot impact any trees belonging to the koala use tree species listed in Schedule 2 for the relevant koala management area (being the 'Southern Tablelands koala management area').
- Despite substantial survey effort across Googong Township, no Koala or signs of Koala have ever been detected.

- The subject land is therefore not 'core koala habitat' which is defined in Chapter 4 as:
 - (a) an area of land which has been assessed by a suitably qualified and experienced person as being highly suitable koala habitat and where koalas are recorded as being present at the time of assessment of the land as highly suitable koala habitat, or*
 - (b) an area of land which has been assessed by a suitably qualified and experienced person as being highly suitable koala habitat and where koalas have been recorded as being present in the previous 18 years.*

In light of the above, and with respect to Chapter 4 of the *Biodiversity and Conservation SEPP 2021*, the subject land does not constitute koala habitat. Therefore, Council can be satisfied that the proposed development is unlikely to have any impact on koalas or koala habitat and may grant consent to the development application.

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Appendices

Appendix A. BAM Plot/Transect Scores

PCT code	Veg. Zone	Plot No.	Composition (species richness)					
			Tree	Shrub	Grass & grass like	Forb	Fern	Other
3375	Zone 2	1	1	0	8	3	0	0
	Zone 4	1	0	0	12	3	0	0
		2	0	0	13	5	0	0
		3	0	0	10	11	0	0
3375	Zone 4	1	0	0	8	5	0	0

PCT code	Veg. Zone	Plot No.	Structure (% cover)					
			Tree	Shrub	Grass & grass like	Forb	Fern	Other
3375	Zone 2	1	10	0	47.1	0.3	0	0
	Zone 4	1	0	0	62.3	0.3	0	0
		2	0	0	75.9	0.5	0	0
		3	0	0	56.2	1.1	0	0
3375	Zone 4	1	0	0	57.9	0.5	0	0

PCT code	Veg. Zone	Plot No.	Function									
			Stem classes					No. of large trees	Hollow bearing trees	% Litter cover	Coarse woody debris (m)	% High threat weed cover
			Regen.	5-9	10-19	20-29	30-49					
3375	Zone 2	1	0	0	0	0	0	1	1	9.4	9	0.1
	Zone 4	1	0	0	0	0	0	0	0	18	0	0.1
		2	0	0	0	0	0	0	0	4.2	0	0.2
		3	0	0	0	0	0	0	0	10.6	0	0.1
3375	Zone 4	1	0	0	0	0	0	0	0	3.8	0	0.1

Appendix B. Flora Species Recorded by Plot and Percent Cover

Species Name	Common Name	3375.2.1	3375.4.1	3375.4.2	3375.4.3	3376.4.1
Exotic						
<i>Aira sp.</i>	A Hair Grass				0.1	
<i>Bromus sp.</i>	A Brome Grass					0.2
<i>Carthamus lanatus</i>	Saffron Thistle	0.1	0.1	0.1	0.1	0.1
<i>Centaureum sp.</i>	A Centaury				0.1	
<i>Chondrilla juncea</i>	Skeleton Weed		0.1			
<i>Cirsium vulgare</i>	Spear Thistle	0.1				
<i>Conyza sp.</i>	A Fleabane				0.1	
<i>Cynodon dactylon</i>	Common Couch					3
<i>Eleusine tristachya</i>	Goose Grass	10	1	5	1	7
<i>Eragrostis curvula</i>	African Lovegrass			0.1		
<i>Gamochaeta americana</i>	Cudweed				0.1	0.1
<i>Hypochaeris radicata</i>	Catsear		0.1	0.3	0.1	0.2
<i>Lolium perenne</i>	Perennial Ryegrass					0.1
<i>Paronychia brasiliiana</i>	Chilean Whitlow Wort, Brazilian Whitlow	0.1			0.1	
<i>Petrorhagia nanteuilii</i>	Proliferous Pink				0.1	
<i>Rumex acetosella</i>	Sheep Sorrel	0.1	0.1	0	0.1	3
<i>Tolpis barbata</i>	Yellow Hawkweed				0.1	
<i>Trifolium sp.</i>	A Clover				0.1	
<i>Vulpia sp.</i>	Rat's-tail Fescue		2	0.2	2	0.1
Native						
<i>Alternanthera sp.</i>	Joyweed			0.1	0.1	
<i>Anthosachne scabra</i>	Wheatgrass, Common Wheatgrass		2			
<i>Austrostipa bigeniculata</i>	Yanganbil	1	15	3	1	10
<i>Austrostipa scabra</i>	Speargrass	15	5	3	5	7
<i>Bothriochloa macra</i>	Red Grass	2	10	3	5	
<i>Carex inversa</i>	Knob Sedge	0.1	0.1	0.1		0.1
<i>Chloris truncata</i>	Windmill Grass		1	5	2	5
<i>Chrysocephalum apiculatum</i>	Common Everlasting				0.1	

Species Name	Common Name	3375.2.1	3375.4.1	3375.4.2	3375.4.3	3376.4.1
<i>Cymbonotus lawsonianus</i>	Bear's Ear				0.1	
<i>Dysphania pumilio</i>	Small Crumbweed					0.1
<i>Eragrostis brownii</i>	Brown's Lovegrass	3	1	40	20	0.2
<i>Erodium sp.</i>	Crowfoot					0.1
<i>Eryngium ovinum</i>	Blue Devil				0.1	
<i>Eucalyptus rossii</i>	Inland Scribbly Gum	10				
<i>Euchiton sphaericus</i>	Star Cudweed					0.1
<i>Euchiton sp.</i>	A Cudweed		0.1	0.1		
<i>Euphorbia dallachyana</i>	Caustic Weed		0.1		0.1	
<i>Haloragis heterophylla</i>	Variable Raspwort				0.1	
<i>Juncus australis</i>	Rush	1		0.5		0.6
<i>Juncus filicaulis</i>	Thread Rush			3		
<i>Juncus sp. A</i>	A Rush				0.1	
<i>Juncus sp. B</i>	A Rush		0.1			
<i>Lomandra filiformis subsp. coriacea</i>	Wattle Matt-rush			0.1	0.1	
<i>Malva spp.</i>	Mallow	0.1				
<i>Microlaena stipoides</i>	Weeping Grass	15	3	3		5
<i>Oxalis perennans</i>	Oxalis	0.1	0.1	0.1	0.1	0.1
<i>Panicum effusum</i>	Hairy Panic		0.1	0.2	2	
<i>Rumex brownii</i>	Swamp Dock					0.1
<i>Rytidosperma carphoides</i>	Short Wallaby Grass		5	10	15	
<i>Rytidosperma sp.</i>	A Wallaby Grass	10	20	5	6	30
<i>Solenogyne dominii</i>	Smooth Solenogyne			0.1	0.1	
<i>Sonchus sp.</i>	Sowthistle	0.1				
<i>Tricoryne elatior</i>	Yellow Autumn-lily				0.1	
<i>Vittadinia muelleri</i>	Narrow-leafed New Holland Daisy				0.1	
<i>Wahlenbergia gracilis</i>	Sprawling Bluebell			0.1	0.1	
Native Species		17	21	23	34	22
% Native Perennial Ground Cover		82.0	97.8	93.3	96.6	81.2
No. non-grass native understorey species		5	5	9	13	7

Appendix C. Remnant Tree Assessment

Easting	Northing	Species	Age	DBH (cm)	Height (m)	Crown Diameter (m)	No. of small hollows	No. of medium hollows	No. of large hollows	Comments
702719	6076184	<i>Eucalyptus rossii</i>	Mature	68, 66	14	10	1	2	1	Rosellas active
702851	6076133	<i>Eucalyptus sp.</i>	Dead	81	18	0	2	3	-	-
702878	6076143	<i>Eucalyptus blakelyi</i>	Mature	51	16	6	-	-	-	-
703261	6076325	<i>Eucalyptus nortonii</i>	Mature	91	16	12	-	-	-	-

Appendix D. BAM Credit Summary Report



BAM Vegetation Zones Report

Proposal Details

Assessment Id	Assessment name	BAM data last updated *
00054824/BAAS20006/25/00054825	3365 Googong Planning Proposal - 2024_25 - BAM Stage 2	28/10/2024
Assessor Name	Report Created	BAM Data version *
Samuel F Reid	01/04/2025	Current classification (live - default) (80)
Assessor Number	Assessment Type	BAM Case Status
BAAS20006	Part 4 Developments (General)	Open
Assessment Revision	BOS entry trigger	Date Finalised
1	BOS Threshold: Area clearing threshold	To be finalised

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Vegetation Zones

#	Name	PCT	Condition	Area	Minimum number of plots	Management zones
1	3375_Zone_4	3375-Monaro-Queanbeyan Rolling Hills Grassy Forest	Zone_4	6.83	3	



BAM Vegetation Zones Report

2	3376_Zone_4	3376-Southern Tableland Grassy Box Woodland	Zone_4	0.44	1	
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BAM Predicted Species Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00054824/BAAS20006/25/00054825	3365 Googong Planning Proposal - 2024_25 - BAM Stage 2	28/10/2024
Assessor Name	Report Created	BAM Data version *
Samuel F Reid	01/04/2025	Current classification (live - default) (80)
Assessor Number	Assessment Type	BAM Case Status
BAAS20006	Part 4 Developments (General)	Open
Assessment Revision	BOS entry trigger	Date Finalised
1	BOS Threshold: Area clearing threshold	To be finalised

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Threatened species reliably predicted to utilise the site. No surveys are required for these species. Ecosystem credits apply to these species.

Common Name	Scientific Name	Vegetation Types(s)
Black Falcon	Falco subniger	3375-Monaro-Queanbeyan Rolling Hills Grassy Forest 3376-Southern Tableland Grassy Box Woodland
Brown Treecreeper (eastern subspecies)	Climacteris picumnus victoriae	3375-Monaro-Queanbeyan Rolling Hills Grassy Forest 3376-Southern Tableland Grassy Box Woodland
Diamond Firetail	Stagonopleura guttata	3375-Monaro-Queanbeyan Rolling Hills Grassy Forest 3376-Southern Tableland Grassy Box Woodland
Dusky Woodswallow	Artamus cyanopterus cyanopterus	3375-Monaro-Queanbeyan Rolling Hills Grassy Forest 3376-Southern Tableland Grassy Box Woodland
Eastern False Pipistrelle	Falsistrellus tasmaniensis	3375-Monaro-Queanbeyan Rolling Hills Grassy Forest 3376-Southern Tableland Grassy Box Woodland
Flame Robin	Petroica phoenicea	3375-Monaro-Queanbeyan Rolling Hills Grassy Forest 3376-Southern Tableland Grassy Box Woodland
Gang-gang Cockatoo	Callocephalon fimbriatum	3375-Monaro-Queanbeyan Rolling Hills Grassy Forest 3376-Southern Tableland Grassy Box Woodland

BAM Predicted Species Report

Grey-headed Flying-fox	Pteropus poliocephalus	3375-Monaro-Queanbeyan Rolling Hills Grassy Forest 3376-Southern Tableland Grassy Box Woodland
Large Bent-winged Bat	Miniopterus orianae oceanensis	3375-Monaro-Queanbeyan Rolling Hills Grassy Forest 3376-Southern Tableland Grassy Box Woodland
Little Eagle	Hieraaetus morphnoides	3375-Monaro-Queanbeyan Rolling Hills Grassy Forest 3376-Southern Tableland Grassy Box Woodland
Little Lorikeet	Glossopsitta pusilla	3375-Monaro-Queanbeyan Rolling Hills Grassy Forest 3376-Southern Tableland Grassy Box Woodland
Little Whip Snake	Suta flagellum	3376-Southern Tableland Grassy Box Woodland
Olive Whistler	Pachycephala olivacea	3375-Monaro-Queanbeyan Rolling Hills Grassy Forest 3376-Southern Tableland Grassy Box Woodland
Regent Honeyeater	Anthochaera phrygia	3375-Monaro-Queanbeyan Rolling Hills Grassy Forest 3376-Southern Tableland Grassy Box Woodland
Rosenberg's Goanna	Varanus rosenbergi	3375-Monaro-Queanbeyan Rolling Hills Grassy Forest 3376-Southern Tableland Grassy Box Woodland
Scarlet Robin	Petroica boodang	3375-Monaro-Queanbeyan Rolling Hills Grassy Forest 3376-Southern Tableland Grassy Box Woodland
South-eastern Hooded Robin	Melanodryas cucullata cucullata	3375-Monaro-Queanbeyan Rolling Hills Grassy Forest 3376-Southern Tableland Grassy Box Woodland
Southern Whiteface	Aphelocephala leucopsis	3375-Monaro-Queanbeyan Rolling Hills Grassy Forest 3376-Southern Tableland Grassy Box Woodland
Speckled Warbler	Chthonicola sagittata	3375-Monaro-Queanbeyan Rolling Hills Grassy Forest 3376-Southern Tableland Grassy Box Woodland
Spotted Harrier	Circus assimilis	3375-Monaro-Queanbeyan Rolling Hills Grassy Forest 3376-Southern Tableland Grassy Box Woodland
Spotted-tailed Quoll	Dasyurus maculatus	3375-Monaro-Queanbeyan Rolling Hills Grassy Forest 3376-Southern Tableland Grassy Box Woodland
Square-tailed Kite	Lophoictinia isura	3375-Monaro-Queanbeyan Rolling Hills Grassy Forest 3376-Southern Tableland Grassy Box Woodland
Swift Parrot	Lathamus discolor	3375-Monaro-Queanbeyan Rolling Hills Grassy Forest 3376-Southern Tableland Grassy Box Woodland
Turquoise Parrot	Neophema pulchella	3375-Monaro-Queanbeyan Rolling Hills Grassy Forest
Varied Sittella	Daphoenositta chrysoptera	3375-Monaro-Queanbeyan Rolling Hills Grassy Forest 3376-Southern Tableland Grassy Box Woodland

BAM Predicted Species Report

White-bellied Sea-Eagle	Haliaeetus leucogaster	3375-Monaro-Queanbeyan Rolling Hills Grassy Forest 3376-Southern Tableland Grassy Box Woodland
White-throated Needle-tail	Hirundapus caudacutus	3375-Monaro-Queanbeyan Rolling Hills Grassy Forest 3376-Southern Tableland Grassy Box Woodland
Yellow-bellied Sheath-tail-bat	Saccolaimus flaviventris	3376-Southern Tableland Grassy Box Woodland

Threatened species Manually Added

None added

Threatened species assessed as not within the vegetation zone(s) for the PCT(s)

Common Name	Scientific Name	Plant Community Type(s)
Australasian Bittern	Botaurus poiciloptilus	3376-Southern Tableland Grassy Box Woodland
Black-necked Stork	Ephippiorhynchus asiaticus	3375-Monaro-Queanbeyan Rolling Hills Grassy Forest 3376-Southern Tableland Grassy Box Woodland
South-eastern Glossy Black-Cockatoo	Calyptrorhynchus lathami lathami	3375-Monaro-Queanbeyan Rolling Hills Grassy Forest 3376-Southern Tableland Grassy Box Woodland

Threatened species assessed as not within the vegetation zone(s) for the PCT(s)

Refer to BAR for detailed justification

Common Name	Scientific Name	Justification in the BAM-C
Australasian Bittern	Botaurus poiciloptilus	Habitat constraints
Black-necked Stork	Ephippiorhynchus asiaticus	Habitat constraints
South-eastern Glossy Black-Cockatoo	Calyptrorhynchus lathami lathami	Habitat constraints

BAM Candidate Species Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00054824/BAAS20006/25/00054825	3365 Googong Planning Proposal - 2024_25 - BAM Stage 2	28/10/2024
Assessor Name	Report Created	BAM Data version *
Samuel F Reid	01/04/2025	Current classification (live - default) (80)
Assessor Number	Assessment Type	BAM Case Status
BAAS20006	Part 4 Developments (General)	Open
Assessment Revision	BOS entry trigger	Date Finalised
1	BOS Threshold: Area clearing threshold	To be finalised

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

List of Species Requiring Survey

Name	Presence	Survey Months
<i>Dillwynia glaucula</i> Michelago Parrot-pea	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☒ Dec ☐ Survey month outside the specified months?
<i>Haliaeetus leucogaster</i> White-bellied Sea-Eagle	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☒ Dec ☐ Survey month outside the specified months?

BAM Candidate Species Report

<i>Hieraaetus morphnoides</i> Little Eagle	No (surveyed) *Survey months are outside of the months specified in Bionet.	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☒ Dec ☒ Survey month outside the specified months?
<i>Leucochrysum albicans subsp. tricolor</i> Hoary Sunray	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☒ Dec ☐ Survey month outside the specified months?
<i>Pomaderris pallida</i> Pale Pomaderris	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☒ Dec ☐ Survey month outside the specified months?

Threatened species Manually Added

None added

Threatened species assessed as not on site

Refer to BAR for detailed justification

Common name	Scientific name	Justification in the BAM-C
Barking Owl	Ninox connivens	Habitat constraints
Black Gum	Eucalyptus aggregata	Refer to BAR
Brush-tailed Phascogale	Phascogale tapoatafa	Habitat degraded
Brush-tailed Rock-wallaby	Petrogale penicillata	Habitat constraints
Buttercup Doubletail	Diuris aequalis	Refer to BAR
Button Wrinklewort	Rutidosis leptorrhynchoides	Habitat degraded
Creeping Hop-bush	Dodonaea procumbens	Refer to BAR
Eastern Pygmy-possum	Cercartetus nanus	Habitat degraded
Gang-gang Cockatoo	Callocephalon fimbriatum	Habitat constraints

BAM Candidate Species Report

Giant Burrowing Frog	Heleioporus australiacus	Refer to BAR
Golden Sun Moth	Synemon plana	Refer to BAR
Green and Golden Bell Frog	Litoria aurea	Habitat constraints
Grey-headed Flying-fox	Pteropus poliocephalus	Habitat constraints
Key's Matchstick Grasshopper	Keyacris scurra	Habitat degraded
Koala	Phascolarctos cinereus	Habitat degraded
Large Bent-winged Bat	Miniopterus orianae oceanensis	Habitat constraints
Mauve Burr-daisy	Calotis glandulosa	Refer to BAR
Pink-tailed Legless Lizard	Aprasia parapulchella	Refer to BAR
Powerful Owl	Ninox strenua	Habitat constraints
Regent Honeyeater	Anthochaera phrygia	Habitat constraints
Silky Swainson-pea	Swainsona sericea	Habitat degraded
Silver-leafed Gum	Eucalyptus pulverulenta	Refer to BAR
Small Purple-pea	Swainsona recta	Habitat degraded
South-eastern Glossy Black-Cockatoo	Calyptorhynchus lathami lathami	Habitat constraints
Southern Bell Frog	Litoria raniformis	Refer to BAR
Southern Greater Glider	Petauroides volans	Refer to BAR
Southern Myotis	Myotis macropus	Habitat constraints
Square-tailed Kite	Lophoictinia isura	Habitat degraded
Squirrel Glider	Petaurus norfolcensis	Habitat degraded
Striped Legless Lizard	Delma impar	Refer to BAR
Swift Parrot	Lathamus discolor	Habitat constraints
Tarengo Leek Orchid	Prasophyllum petilum	Habitat degraded
Yellow-spotted Tree Frog	Litoria castanea	Refer to BAR



BAM Biodiversity Credit Report (Like for like)

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00054824/BAAS20006/25/00054825	3365 Googong Planning Proposal - 2024_25 - BAM Stage 2	28/10/2024
Assessor Name	Assessor Number	BAM Data version *
Samuel F Reid	BAAS20006	Current classification (live - default) (80)
Proponent Names	Report Created	BAM Case Status
	01/04/2025	Open
Assessment Revision	BOS entry trigger	Assessment Type
1	BOS Threshold: Area clearing threshold	Part 4 Developments (General)
Date Finalised	* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.	
To be finalised		

Potential Serious and Irreversible Impacts



BAM Biodiversity Credit Report (Like for like)

Name of threatened ecological community	Listing status	Name of Plant Community Type/ID
White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	Critically Endangered Ecological Community	3376-Southern Tableland Grassy Box Woodland
Species		
Nil		

Additional Information for Approval

PCT Outside Ibra Added

None added

PCTs With Customized Benchmarks

PCT
No Changes

Predicted Threatened Species Not On Site

Name
Botaurus poiciloptilus / Australasian Bittern
Calyptorhynchus lathami lathami / South-eastern Glossy Black-Cockatoo
Ephippiorhynchus asiaticus / Black-necked Stork

BAM Biodiversity Credit Report (Like for like)

Ecosystem Credit Summary (Number and class of biodiversity credits to be retired)

Name of Plant Community Type/ID	Name of threatened ecological community	Area of impact	HBT Cr	No HBT Cr	Total credits to be retired
3375-Monaro-Queanbeyan Rolling Hills Grassy Forest	Not a TEC	6.8	0	0	0
3376-Southern Tableland Grassy Box Woodland	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	0.4	0	0	0

3375-Monaro-Queanbeyan Rolling Hills Grassy Forest	Like-for-like credit retirement options					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Southern Tableland Grassy Woodlands This includes PCT's: 303, 312, 350, 654, 703, 705, 731, 1330, 3365, 3366, 3367, 3368, 3369, 3370, 3372, 3373, 3374, 3375, 3376, 3377	Southern Tableland Grassy Woodlands >=50% and <70%	3375_Zone_4	No	0	Monaro, Bungonia, Crookwell, Kybayan-Gourock, Monaro, Murrumbateman, Snowy Mountains and South East Coastal Ranges. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

BAM Biodiversity Credit Report (Like for like)

3376-Southern Tableland Grassy Box Woodland	Like-for-like credit retirement options					
	Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region
	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla This includes PCT's: 74, 75, 83, 250, 266, 267, 268, 270, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 286, 298, 302, 312, 341, 342, 347, 350, 352, 356, 367, 381, 382, 395, 401, 403, 421, 433, 434, 435, 436, 437, 451, 483, 484, 488, 492, 496, 508, 509, 510, 511, 516, 528, 538, 544, 563, 567, 571, 589, 590, 597, 599, 618, 619, 622, 633,	-	3376_Zone_4	No	0	Monaro, Bungonia, Crookwell, Kybeyan-Gourock, Monaro, Murrumbateman, Snowy Mountains and South East Coastal Ranges. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.



BAM Biodiversity Credit Report (Like for like)

	654, 702, 703, 704, 705, 710, 711, 796, 797, 799, 847, 851, 921, 1099, 1303, 1304, 1307, 1324, 1329, 1330, 1332, 1383, 1606, 1608, 1611, 1691, 1693, 1695, 1698, 3314, 3359, 3363, 3373, 3376, 3387, 3388, 3394, 3395, 3396, 3397, 3398, 3399, 3406, 3415, 3533, 4147, 4149, 4150					
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Species Credit Summary

No Species Credit Data

Credit Retirement Options

Like-for-like credit retirement options

BAM Biodiversity Credit Report (Variations)

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00054824/BAAS20006/25/00054825	3365 Googong Planning Proposal - 2024_25 - BAM Stage 2	28/10/2024
Assessor Name	Assessor Number	BAM Data version *
Samuel F Reid	BAAS20006	Current classification (live - default) (80)
Proponent Name(s)	Report Created	BAM Case Status
	01/04/2025	Open
Assessment Revision	BOS entry trigger	Assessment Type
1	BOS Threshold: Area clearing threshold	Part 4 Developments (General)
Date Finalised	* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.	
To be finalised		

Potential Serious and Irreversible Impacts

Name of threatened ecological community	Listing status	Name of Plant Community Type/ID
White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	Critically Endangered Ecological Community	3376-Southern Tableland Grassy Box Woodland
Species		
Nil		

Additional Information for Approval

BAM Biodiversity Credit Report (Variations)

PCT Outside Ibra Added

None added

PCTs With Customized Benchmarks

PCT
No Changes

Predicted Threatened Species Not On Site

Name
Botaurus poiciloptilus / Australasian Bittern
Calyptorhynchus lathami lathami / South-eastern Glossy Black-Cockatoo
Ephippiorhynchus asiaticus / Black-necked Stork

Ecosystem Credit Summary (Number and class of biodiversity credits to be retired)

Name of Plant Community Type/ID	Name of threatened ecological community	Area of impact	HBT Cr	No HBT Cr	Total credits to be retired
3375-Monaro-Queanbeyan Rolling Hills Grassy Forest	Not a TEC	6.8	0	0	0.00
3376-Southern Tableland Grassy Box Woodland	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	0.4	0	0	0.00

3375-Monaro-Queanbeyan Rolling Hills Grassy Forest	Like-for-like credit retirement options					
	Class	Trading group	Zone	HBT	Credits	IBRA region

BAM Biodiversity Credit Report (Variations)

	Southern Tableland Grassy Woodlands This includes PCT's: 303, 312, 350, 654, 703, 705, 731, 1330, 3365, 3366, 3367, 3368, 3369, 3370, 3372, 3373, 3374, 3375, 3376, 3377	Southern Tableland Grassy Woodlands >=50% and <70%	3375_Zone_4	No	0	Monaro, Bungonia, Crookwell, Kybayan-Gourock, Monaro, Murrumbateman, Snowy Mountains and South East Coastal Ranges. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Variation options					
	Formation	Trading group	Zone	HBT	Credits	IBRA region
	Grassy Woodlands	Tier 3 or higher threat status	3375_Zone_4	No	0	IBRA Region: South Eastern Highlands, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
3376-Southern Tableland Grassy Box Woodland	Like-for-like credit retirement options					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla This includes PCT's: 74, 75, 83, 250, 266, 267, 268, 270, 274, 275, 276,	-	3376_Zone_4	No	0	Monaro, Bungonia, Crookwell, Kybayan-Gourock, Monaro, Murrumbateman, Snowy Mountains and South East Coastal Ranges. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

BAM Biodiversity Credit Report (Variations)

277, 278, 279, 280, 281, 282, 283, 284, 286, 298, 302, 312, 341, 342, 347, 350, 352, 356, 367, 381, 382, 395, 401, 403, 421, 433, 434, 435, 436, 437, 451, 483, 484, 488, 492, 496, 508, 509, 510, 511, 516, 528, 538, 544, 563, 567, 571, 589, 590, 597, 599, 618, 619, 622, 633, 654, 702, 703, 704, 705, 710, 711, 796, 797, 799, 847, 851, 921, 1099, 1303, 1304, 1307, 1324, 1329, 1330, 1332, 1383, 1606, 1608, 1611, 1691, 1693, 1695, 1698, 3314, 3359, 3363, 3373, 3376, 3387, 3388, 3394, 3395, 3396, 3397, 3398, 3399, 3406, 3415, 3533, 4147, 4149, 4150					
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Species Credit Summary

No Species Credit Data

Credit Retirement Options Like-for-like options

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00054824/BAAS20006/25/00054825	3365 Googong Planning Proposal - 2024_25 - BAM Stage 2	28/10/2024
Assessor Name	Report Created	BAM Data version *
Samuel F Reid	01/04/2025	Current classification (live - default) (80)
Assessor Number	BAM Case Status	Date Finalised
BAAS20006	Open	To be finalised
Assessment Revision	BOS entry trigger	Assessment Type
1	BOS Threshold: Area clearing threshold	Part 4 Developments (General)

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Ecosystem credits for plant communities types (PCT), ecological communities & threatened species habitat

Zone	Vegetation zone name	TEC name	Current Vegetation integrity score	Change in Vegetation integrity (loss / gain)	Area (ha)	Sensitivity to loss (Justification)	Species sensitivity to gain class	BC Act Listing status	EPBC Act listing status	Biodiversity risk weighting	Potential SAI	Ecosystem credits
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BAM Credit Summary Report

Monaro-Queanbeyan Rolling Hills Grassy Forest												
1	3375_Zone_4	Not a TEC	15.5	15.5	6.8	PCT Cleared - 61%	Low Sensitivity to Gain			1.25		0
										Subtotal		0
Southern Tableland Grassy Box Woodland												
2	3376_Zone_4	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	11.5	11.5	0.44	Population size	Low Sensitivity to Gain	Critically Endangered Ecological Community	Not Listed	2.00	True	0
										Subtotal		0
										Total		0

Species credits for threatened species

BAM Credit Summary Report

Vegetation zone name	Habitat condition (Vegetation Integrity)	Change in habitat condition	Area (ha)/Count (no. individuals)	Sensitivity to loss (Justification)	Sensitivity to gain (Justification)	BC Act Listing status	EPBC Act listing status	Potential SAI	Species credits
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