

# Ecological Assessment Report

of  
SECTIONS A AND B OF PROPOSED  
SUBDIVISION AT (PART OF) THE BONSHAW  
RURAL PROPERTY, JERRABOMBERRA, ACT

For:

Sustainable Data Resources Pty Ltd



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# **1. INTRODUCTION AND PROJECT BACKGROUND**

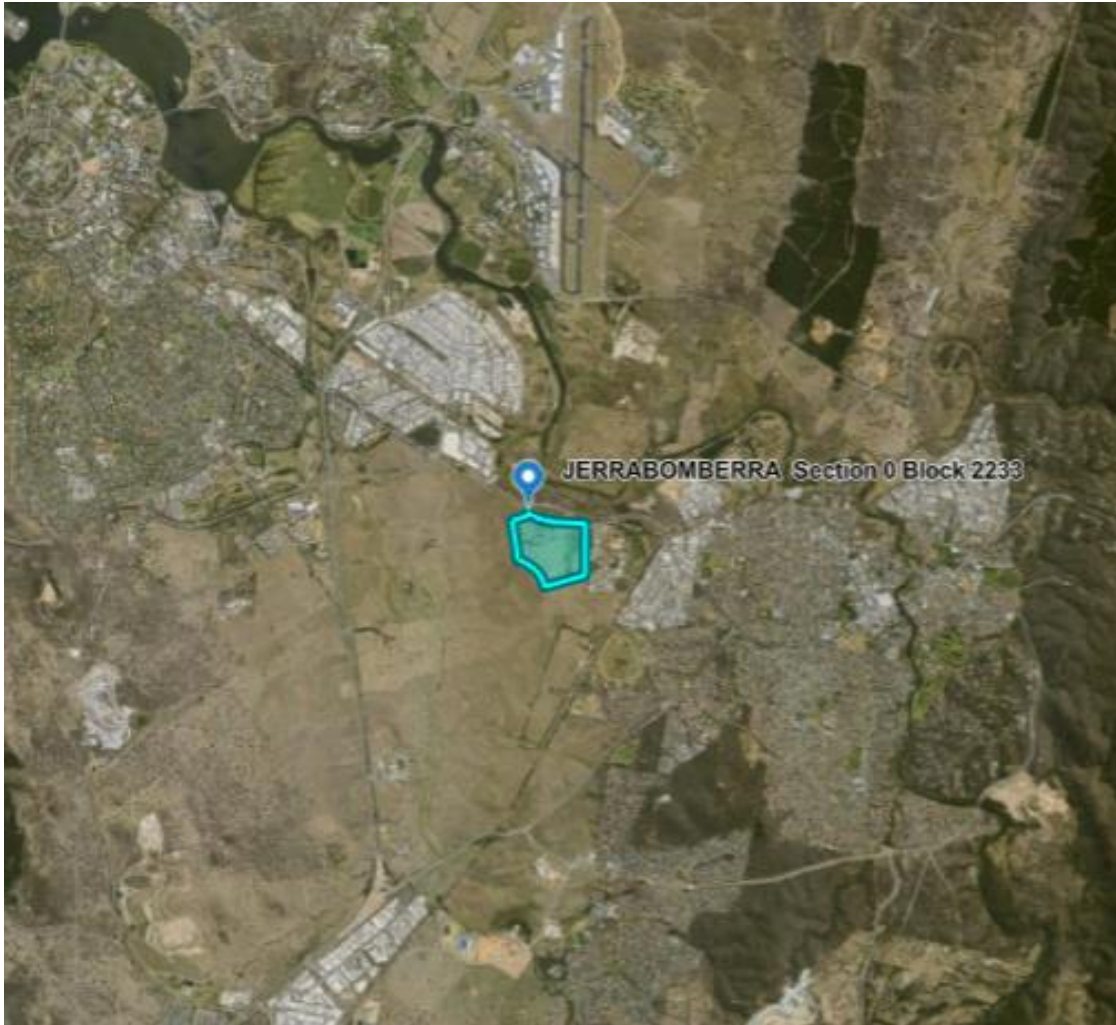
## **1.1 Project background**

Sustainable Data Resources Pty Ltd (The Proponent) are proposing to submit a Subdivision Development Application (SDA) of the Bonshaw rural property, located at 722 Canberra Avenue, Symonston (Blocks 2233, 2234, 2235, Jerrabomberra, and Block 12 Section 111, Symonston, ACT (Figure 1). The specific SDA forming the focus of this assessment occurs in the in within the north, northwestern margins of the property, including Block 2233 Jerrabomberra and Block 12 Section 111, Symonston. The area of the SDA under consideration is identified as Sections A and D as detailed in (Figure 2).

The SDA includes the creation of a new entrance from Canberra Avenue, and internal roads (labelled Roads 1, 2 and 3) and (currently) two large super-lots, encompassing Section A (Blocks A, B and C) of the SDA. It is understood that the two large super-lots will be subject to a future SDA to create smaller lots inside these. The SDA also includes consideration of future lots within the area identified as Section D (Blocks A, B and C), and includes a future proposed zone substation in this area (proposed Block B).

It is noted that Capital Ecology previously undertook an *Ecological Values and Constraints Assessment* of the subject site (including all parts/parcels of the Bonshaw property) which included various detailed targeted surveys conducted in Spring/Summer 2022 and early 2023. The results of that assessment are described in further detail below, but in summary (and relevant to this brief report), no significant ecological values were identified within the area of Section A, while a number of important biodiversity values were identified in the far northern and eastern portions of Section D, the subject of the current SDA and this assessment. Based on those findings, only a brief assessment of the subject site for Section A of this SDA is considered necessary to support the application submission (along with accompanying statements of response against the *ACT Biodiversity Sensitive Urban Design Guide*; BSUD, ACT Government, 2023). Further detailed assessment of certain areas of Section D are likely to be required as discussed further in this report.

This Ecological Assessment Report (EAR) has been prepared to describe the site's existing biodiversity values and considers the potential impacts of the proposed redevelopment on those values. A key consideration is to assess whether the site has the potential to support any listed threatened entities (i.e., flora, fauna and ecological communities) and whether the project may have the potential to result in a significant impact to these entities in accordance with prescribed impact assessment criteria, described further below. This assessment therefore also provides confirmation of whether the project may have the potential to trigger the requirement for an Environmental Impact Statement (EIS) to be prepared in accordance with provisions of the *ACT Planning Act 2023*, or the requirement for a referral to be made the Commonwealth under the provisions of the (commonwealth) *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).



**Figure 1. Subject site location**

(Aerial Image source: ACTmapi, September 2024 imager; note: only Block 2233 shown).

## 1.2 Summary of Proposed Development

The overall proposal is for the establishment of a light industrial/commercial (non-urban zone business park) precinct:

- Demolition of existing structures and removal of trees.
- Subdivision of Block 12 Section 111 Symonston and Block 2233 Jerrabomberra into superblocks.
- Variation to the purpose clause of crown leases of Block 12 Section 111 Symonston and Block 2233 Jerrabomberra to add additional uses.
- Landscaping – including tree removal.
- Signage.
- Associated on-site and off-site infrastructure works.

A separate Works Approval application is being sought from the National Capital Authority (NCA) for the works proposed on the road reserve of Canberra Avenue.



## **2. Site Context**

The subject site for the development is the northwestern parts of the Bonshaw rural property (722 Canberra Avenue, Jerrabomberra), including specifically, the areas identified as Sections A and D of the (currently) proposed SDA which this assessment supports, and identified as including Block 2233 Jerrabomberra and Block 12 Section 111, Symonston (see Figure 3).

Section A occupies an area of about 180,000 m<sup>2</sup> (or, 18ha) while Section B of this assessment occupies an area of about 20,000 m<sup>2</sup> (or, 2ha)<sup>1</sup>.

The subject site land is zoned NUZ1 Broadacre and is also subject to the Territory Plan Overlay Zones for Main Avenues and Approach Routes (MAAR) under the National Capital Plan (NCP). The property is bordered by:

- HMAS Harman to the northeast;
- residential areas of Crestwood and Queanbeyan West to the east; and
- rural land to the west and south, largely consisting of patches of Natural Temperate Grassland and modified pasture grazing land.

The Bonshaw rural property was established in circa 1950's. The land use history is primarily rural, agricultural uses including mainly livestock grazing. Prior to 1951, the land appears to have been an open treeless grassland, likely used for livestock grazing.

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<sup>1</sup> This includes only the current area shown for the zone substation and does not include the open grassland across the north (Block A, Section D) or the proposed fire access trail along the southern and eastern margins of Section D, commencing from the southeastern corner of Section A. Only a small portion of Section D was considered under this assessment for reasons described further in this report.

### 3. ASSESSMENT APPROACH

The approach undertaken for this preliminary investigation involved a combination of both a desktop and preliminary site-based survey as described below.

#### 3.1 Desktop Assessment

Background database searches were conducted to identify any existing known or recorded environmental values within the study site that may provide a potential to constraint to the development, or otherwise impact upon the planning and approval requirements to allow the works to proceed. These database searches include the following:

- ACT ACTmapi Environment Map (<https://apps.vertigisstudio.com/web/?app=71d40a83bb1341c88b7207517f0ce213>)
- ACT Ecological Network Dashboard (<https://actmapi-actgov.opendata.arcgis.com/apps/ACTGOV::act-ecological-network-dashboard/explore>)
- Review of ACT Historic Aerial Imagery (<https://apps.vertigisstudio.com/web/?app=797815d981ae4d5497dbd336ccf71825>)
- Canberra Nature Map (<https://canberra.naturemapr.org>)
- Atlas of Living Australia (ALA) (<https://www.ala.org.au/>)
- EPBC protected Matters Search Tool (PMST; applying a 10 km search area centred at the mid-point of the project area). (<http://www.environment.gov.au/webgis-framework/apps/pmst/pmst.jsf>)
- Commonwealth Threatened Species Profiles (<http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl>)
- Review of the previous *Ecological Values and Constraints Assessment* completed by Capital Ecology (July, 2023).

The results of these background searches are summarised briefly in the assessment findings below and in the Threatened Species Evaluation Table (Appendix A).

#### 3.2 Site Survey

A brief daytime site survey was undertaken on 4/5/2025 within the northwestern margins of the Bonshaw property and identified as Parcels A and B which are the subject of the current SDA. The purpose of the site survey was to undertake a general assessment of the biodiversity values of the site, including specifically, to confirm the values reported previously by Capital Ecology of this area and to identify any important ecological features/values that may be impacted by the proposed development.

The survey method involved undertaking a random meander traverse about the majority of the Parcel A and B areas recording all flora species observed and ascribing a cover/abundance score (as per a modified Braun-Blanquet approach; see Appendix B).

Observations of (potential) fauna habitat values were also recorded, including the presence of hollows or nests in trees, fallen timber, rocky outcrops or other notable habitat features.

### **3.3 Survey Adequacy or Limitations**

It is noted that the site survey was somewhat limited in that it did not include any direct targeted survey methods such as those prescribed for threatened fauna species, or other direct surveys methods for other general fauna (for example nocturnal spotlighting surveys). Additionally, the Autumn timing of the survey was likely to be after/outside of the flowering period for a number of threatened flora species known to occur in the broader ACT region. Notwithstanding this, a generalised habitat assessment was completed which, combined with the desktop assessment described above, including consideration of the detailed surveys by Capital Ecology in 2022-23, is considered suitable for informing the likelihood or potential for any threatened species or ecological communities to occur at the site for Section A.

For the eastern and northern parts of Section D (not currently shown as being developed), further survey and assessment is considered necessary to confirm the occurrence of any listed threatened species or ecological communities to adequately inform appropriate future development of these areas



Figure 3. Subject Site Assessment Area and flora survey locations

## 4. ASSESSMENT FINDINGS - SITE VALUES

### 4.1 Vegetation

#### 4.1.1 Composition and structure

The vegetation at the site can be categorised into two distinct areas based on composition and structure being the areas about the existing buildings, structures and driveways, and the open grassland paddock areas in the western parts of the site.

The treed parts of the site about the driveway and existing buildings/structures, supports a mixed composition of both native trees and exotic tree species, the majority of which are likely to have been deliberately planted.

The majority of the native trees recorded at the site are planted specimens, and occur mostly within the northern margins of the site, between the existing homestead and Canberra Avenue, as well as several native trees scattered within the central margins and eastern margins of the main homestead area. A narrow tree band extends east toward the drainage line which supports some native tree species, as well as along the boundary to HMAS Harman (outside of the Parcel A and B areas subject to this assessment and SDA).

The native tree species recorded in the area include mostly Yellow Box (*Eucalyptus melliodora*) and Red Box (*E. polyanthemos*), along with several Brittle Gum (*E. mannifera*) which occur in the front northern area between the main dwelling and Canberra Avenue. Single specimens of Blakely's Red Gum (*E. blakelyi*), Red Ironbark (*E. sideroxylon*) and Argyle Apple (*E. cinerea*) also occur in the area to the immediate east of the main dwelling, while a single Ribbon Gum (*E. viminalis*) occur within the main driveway area in front of a large hayshed in the central parts of the site. Several Kurrajong (*Brachychiton populneus*) also occur throughout the main homestead area, as well as some (few) planted Bottlebrush (*Callistemon sp.*), Tea-tree (*Melaleuca sp.*) and Wattle varieties (*Acacia spp.*), including a number of Cootamundra Wattle (*A. baileyana*<sup>2</sup>), along the front boundary/verge to Canberra Avenue

The (mostly) planted exotic trees at the site include mainly Pine (*Pinus sp.*), Elms (*Ulmus spp.*), Oak (*Quercus sp.*), Ash (*Fraxinus sp.*), Poplar (*Populus sp.*), Cypress Pine (*Cupressus spp.*), Plane Trees (*Platanus sp.*), Honey Locust (*Gleditsia triacanthos*) Box Elder (*Acer sp.*), Plum (*Prunus sp.*), Manchurian Pear and Nettle Trees (*Celtis australis*), as well as numerous exotic shrubs including mainly Photinias (*Photinia sp.*) and some Hawthorn (*Crataegus monogyna*).

In summary, a total of 56 native trees (out of a total of 287 surveyed trees and shrubs<sup>3</sup>) were recorded in the subject site (two large shrubs also are included in the survey, as well as Cootamundra Wattle along front boundary which is not counted). As stated above, all of the (older, larger) trees are likely to have been deliberately planted.

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<sup>2</sup> Generally considered a pest plant because of its invasive nature

<sup>3</sup> This is based on the supplied tree survey and noting that some surveyed trees/shrubs in the total count include some planted bushes/shrubs and dead trees, as well as some trees unable to accurately located on site.

Based on a review of the available historic imagery (see Figures 4 - 7), it is noted that no trees were present at the site in 1951, within the entire area occurring as an open treeless grassland. The earliest tree plantings appear to have started sometime shortly after this, although the earliest plantings, based on the location within the property, are likely to have been exotic (mainly Pine) trees. Given the location and size of the trees (mostly below 40cm trunk diameters), the native tree planting appears to have occurred between 1985 and 1990, indicating a maximum age of about 35-40 years.

The understorey vegetation within the main treed parts of the site was partially modified, and includes numerous exotic specimens, such as those observed in the adjacent open paddocks, described below, as well as planted ornamental garden plants (unidentified). Some, but few, native groundcover plants were observed in this area, including mainly Tall Speargrass (*Austrostipa bigeniculata*) and Tufted Bluebell (*Wahlenbergia communis*).

The open paddock areas across the west/northwestern margins of the site were observed to have a moderate-highly modified groundcover composition and structure. The majority of these areas are subject to current grazing and consequently, had a very low sward height and very little if any natural tussock structure. Some native grasses were recorded in the paddocks, including Tall Speargrass, Redgrass (*Bothriochloa macra*) Corkscrew Grass (*A. scabra*), as well as Weeping Grass (*Microlaena stipoides*) in headed areas near trees, Poa Tussock (*Poa sp.*) and a small amount of Wallaby Grass (*Rytidosperma sp.*). Some native herb, forb and sedge groundcover plants were also observed (in low abundance) in the open paddocks including Grassland Wood Sorrel (*Oxalis perennanse*), some (Tufted) Bluebells and Pinrush (*Juncus fillicaulis*).

Overall, however, the vegetation composition of the open grassland areas in the subject site is considered to form exotic pasture that has been highly modified through grazing and some historic pasture improvement. The vegetation in this area is highly disturbed and dominated by exotic vegetation that is dominated (high cover values) by a diversity of exotic herbaceous weed, particularly (most commonly) African Lovegrass (*Eragrostis curvula*), Paspalum (*Paspalum dilatatum*), Subterranean Clover (*Trifolium subterraneum*), Wild Oats (*Avena sp.*), Buchan Weed (*Hirschfeldia incana*), Dandelion (*Taraxacum sp.*), Flatweed (*Hypochaeris radicata*), Brome grasses (*Bromus spp.*), Phalaris (*Phalaris aquatica*), Scotch Thistle (*Onopordum acanthium*), and Saffron Thistle (*Carthamus lanatus*), as well as numerous other exotic plants (in lower abundance). A single Bathurst Burr (*Xanthium spinosum*) was observed in the far northwestern margins of the site.

The observed species composition appears to have changed somewhat from the earlier reported composition by Capital Ecology (2023) in this general area who described the area as also being exotic pasture, but dominated (mainly) by *Bromus spp.*, Wild Oats, Phalaris and Ryegrass (*Lolium perenne*), along with some Barley Grass (*Hordeum sp.*). Very little Ryegrass or Barley Grass was observed during the recent (May 2025) site assessment however it is noted by Capital Ecology that some cultivation and pasture improvement appears to have been previously undertaken in

these areas, the effects of which are likely to ow be less pronounced, with a wider diversity of colonising (mostly exotic) plants now present in the area.



**Figure 4. 1951 Aerial imagery of the subject locality**



**Figure 5. 1975 Aerial imagery of the subject locality**



Figure 6. 1985 Aerial imagery of the subject locality



Figure 7. 1995 Aerial imagery of the subject locality

#### 4.1.2 Threatened flora

No threatened flora species were detected at the site during the recent (May 2025) site survey, although it is acknowledged that the timing of this inspection is outside of the known occurrence/flowering period for many of the threatened flora species known from the local area. Notwithstanding this, based on the observed habitat conditions, including notably, the highly modified nature of the site, it is considered unlikely that any threatened flora would occur at the subject site.

The desktop assessment also revealed that no listed threatened flora are known to occur within the subject site (see Figure 8). The nearest (ACTmapi) records of any listed threatened to the subject site include the following:

- Button Wrinklewort (*Rutidosia leptorrhynchoides*). The nearest records occur along Woods Lane, and south of HMAS Harman, more than 500m southeast of the site (at its closest point)
- Hoary Sunray (*Leucochrysum albicans*). The nearest records occur at about the intersection of Copper Close and Coal Court, Beard, more than 1.3km east of the site as well as records further east in Queanbeyan.
- Ginninderra Peppercress (*Lepidium ginninderense*). The nearest records occur in open grasslands almost 2km south of the site (at its closest point)

It is noted that the surveys conducted by Capital Ecology in late 2022 – early 2023 included targeted searches for these species in potential habitat areas, but did not record the presence of any these species in the Bonshaw property survey area.

Given the above, there is considered to be a very low probability of any threatened flora occurring at the subject site.

In addition to the above, records of the rare (but not listed threatened) Brush Speargrass (*Aristida behriana*) occurs in open grassland approximately 250 west of the site, as well as along/ near Woods Lane, east of HMAS Harman. No evidence of this species was observed at the site.

#### 4.1.3 Vegetation Community status

As noted in Section 1.2, the subject land would historically have supported a Natural Temperate Grassland (NTG) ecological community.

However, based on the observed floristic composition and structure, including the extent of modification through previous and ongoing landuses, including grazing and some pasture improvement, the vegetation at the site is now considered to be a degraded exotic pasture as described above. This is also consistent with the findings of the Capital Ecology assessment from 2023, and generally consistent with the (current) ACTmapi Ecological Communities mapping which shows the subject site as supporting both exotic and native grasslands as well as areas unmapped areas about the driveway, buildings and structures (see Figures 9 and 10).

The Plant Community Type (PCT) mapping of the site reveals that, apart from the vegetation immediately surrounding the homestead, the majority of the site supports

the PCT ACT01 - *Themeda triandra*- *Rytidosperma caespitosa* - *Austrostipa bigeniculata* Tableland Dry Tussock Grassland.

Within the PCT, there are four Vegetation Condition Zones; as follows:

- ACT01 – Zone 1.1 - EPBC NTG - Native Dom Ground - High Diversity
- ACT01 – Zone 1.2(a)- EPBC NTG - Native Dom Ground - >50% cover foliage cover of key species
- ACT01 – Zone 1.2 (b)- EPBC NTG - Native Dom Ground - Moderate Diversity
- ACT01 – Zone 1.3 - Native Dom Ground - Low Diversity
- ACT01 – Zone 1.4 - Exotic Dom Ground - Low Diversity

Based on the observed floristic composition, and having consideration of the findings of the previous Capital Ecology (2023) findings, the groundcover within the main Section A area of the SDA is identified as being part of the ACT01 – Zone 1.4 - Exotic Dom Ground - Low Diversity PCT.

A small area of ACT01 – Zone 1.3 Native Dom Ground - Low Diversity PCT is mapped as occurring in the northern margins of Section D (see Figure 10). However, this mapped PCT polygon is based only on the previous mapping from Capital Ecology (2023) and has yet to be verified by detailed floristic survey (proposed to be undertaken this upcoming Spring-Summer 2025).

Given the above findings, the open grassland vegetation at the subject site is not considered part of the listed (critically endangered) NTG ecological community under either the Commonwealth EPBC Act criteria or the ACT NC Act criteria.

The vegetation located within the main homestead area, which supports a mixed canopy of both planted native and exotic trees does not meet the criteria for mapping as part of the *Yellow Box Blakely's Red Gum Grassy Woodland* critically endangered ecological community (CEEC) listed under the ACT NC Act or the *White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland* CEEC, listed under the Commonwealth EPBC Act. This vegetation is considered to be part of the APE: *Amenity Planting Exotic* Vegetation Community (Vegetation Class: *Modified or derived*) per the mapping of Baines et. al., 2013 and as currently shown in the ACTmapi Vegetation Community mapping layer.

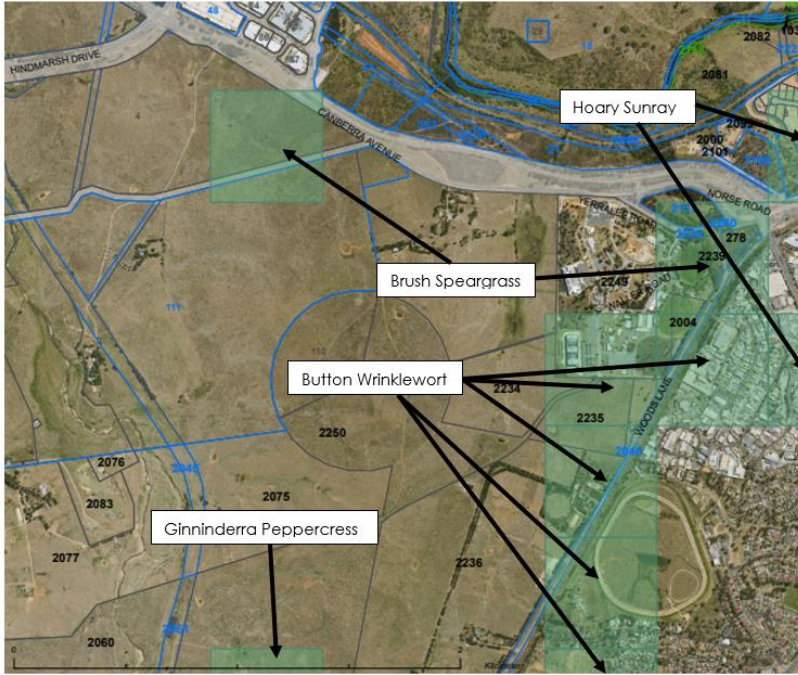


Figure 8. ACTmapi locations of threatened flora in the locality

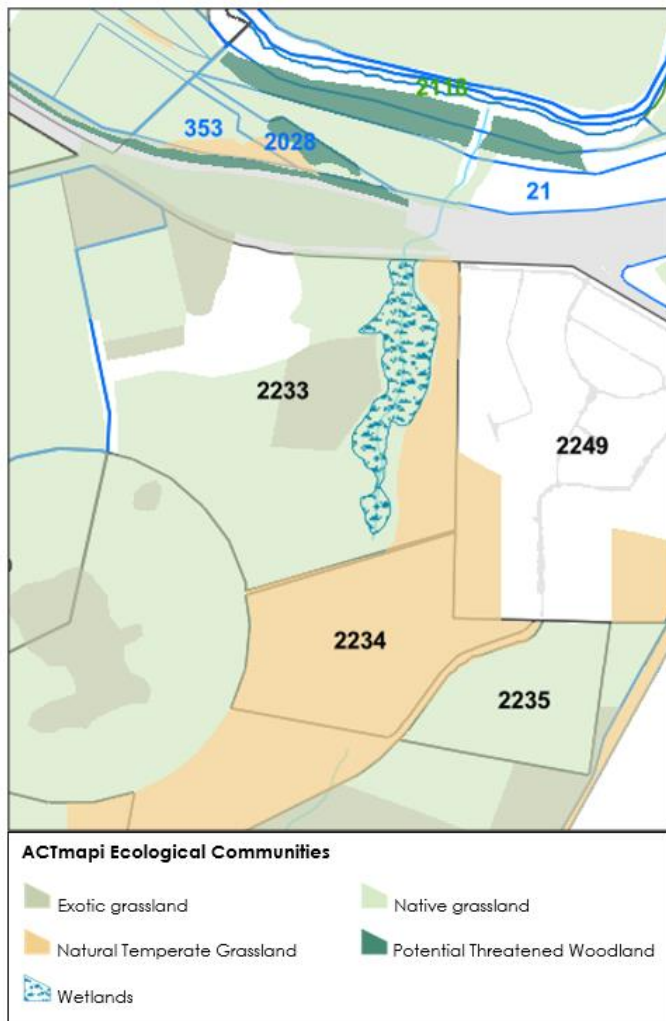


Figure 9. ACTmapi ecological communities mapping for the locality

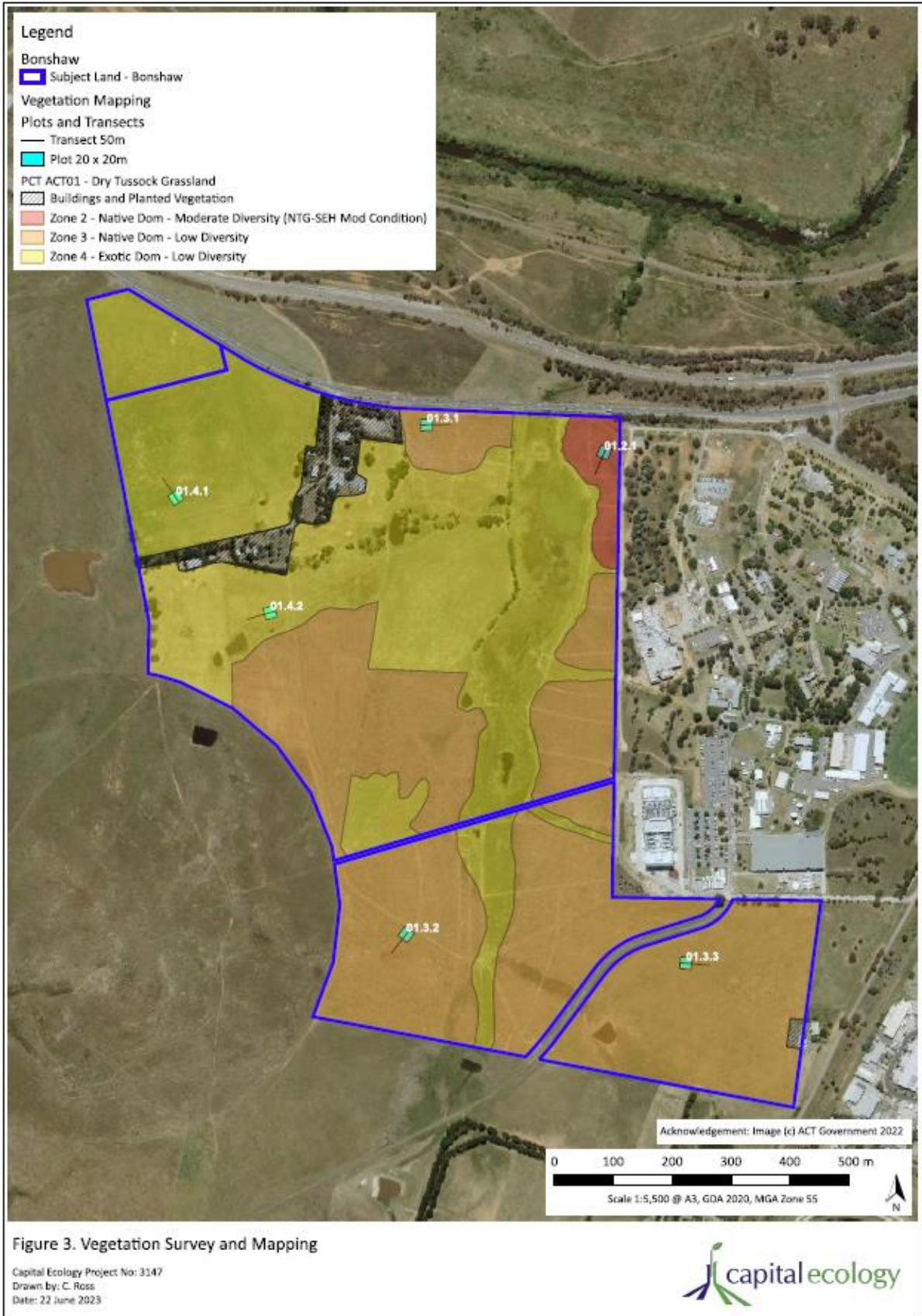


Figure 10. Capital Ecology (2023) vegetation survey and mapping of the Bonshaw property

## 4.1 Fauna Habitat Values

### 4.1.4 General fauna habitat values

The fauna habitat values at the site include some moderate arboreal habitat provided by the existing trees located around the driveways, buildings and structures and some marginal terrestrial fauna habitat, mainly for common grassland species. Aquatic habitats present within the Section A area of the SDA include a small artificially-constructed farm dam in the southeast corner of Section A. A naturally occurring waterway channel (Stream Order 1-2<sup>4</sup>) that appears to be semi-permanent with some more permanent low-laying areas, occurs in the eastern margins of the site within Section D, flowing in a south-north direction. These habitat values are described further below. The potential occurrence of threatened species or their habitats at the subject site are discussed in Section 4.1.2.

The arboreal habitat values of the study area associated with the existing trees are considered to be of only moderate value. Notably, none of the trees were observed to support any tree hollows and no large active nests were seen in any of the trees. Given this, the trees at the site do not provide any notable/observable breeding habitat value. In addition, the majority of the trees at the site are exotic species with minimal nectar-producing flowering, and limited seed production that would be actively fed upon by most species. Given this, the trees (and large shrubs) at the site also provide limited/marginal foraging habitat value.

The understorey groundcover vegetation, both within the treed areas as well as in the open paddocks also provides only marginal habitat value and for limited number of terrestrial fauna species. Of note, there is very little structural complexity, such as natural tussock formation, and therefore, only minimal cover/shelter provided at ground level for smaller fauna types. Given this, as well as the lack of any other notable terrestrial habitat features such as fallen logs or rocky outcrops, there is considered to be very little suitable breeding habitat for many (smaller) native fauna species. Some introduced European Rabbits (*Oryctolagus cuniculus*) and their burrows, were observed in the open grassland area, although in relatively low density.

The buildings and structures of the rural property, including notably features such as hay sheds, are likely to provide some breeding/nesting habitat for a number of (smaller) fauna, although this is likely to be mainly introduced (pest) species such as Black Rats (*Rattus rattus*) and Mice (*Mus musculus*). However, some native reptiles may also use these features including mainly small (common) skink varieties, as well as various snakes that may be attracted to these areas to prey on the forementioned animals.

The open grassland areas support a wide variety of grasses, including some native but mostly exotic species, and therefore may provide some foraging habitat for common herbivorous species such as Eastern Grey Kangaroos (*Macropus giganteus*) seen in nearby paddocks.

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<sup>4</sup> Per the Strahler Stream Ordering method

As noted above, the aquatic habitat values of the site include a small artificially-constructed farm dam in the southeast corner of Section A and a naturally occurring waterway channel in the eastern margins of the site within Section D. The farm dam may provide some (semi) aquatic fauna habitat values, including mainly for common and widespread frog species (such as the Common Eastern Froglet (*Crinia signifera*), Spotted Marsh Frog (*Limnodynastes tasmaniensis*) and Whistling Tree Frog (*Litoria verreauxii*)), although none were heard calling during the recent (May 2025) daytime site survey. Some common waterfowl species may also utilise this feature, although none were seen at the dam during the site inspection. Given the relatively low level of surrounding vegetation cover, including no notable aquatic macrophyte cover, as well as low water quality conditions due to stock access, the overall habitat values of the dam are considered to be minor.

The waterway channel across the eastern margins of the site also provides some aquatic fauna habitat value, again limited mainly to common frogs and some waterfowl species. This waterbody does support relatively good aquatic macrophyte vegetation cover in places, and so it may also assist in maintaining some ecological connectivity in the local area for smaller terrestrial and semi-aquatic fauna, although the large culvert system beneath Canberra Avenue along the northern property boundary does interrupt this connectivity to a moderate-high degree. Given the somewhat semi-permanent nature of this waterbody, including relatively low levels of standing open water, the waterbody is considered unlikely to support any native fish species. Based on these observations, the overall habitat values for native (semi) aquatic fauna are considered to be of only marginal importance.

#### **4.1.5 Threatened fauna**

The desktop assessment revealed that a number of threatened fauna species are known from the local area and were identified as having the potential to occur within the subject site. These include the Striped Legless Lizard (*Delma impar*), Canberra Grassland Earless Dragon (*Tympanocryptis lineata*) Golden Sun Moth (*Synemon plana*), Canberra Raspy Cricket (*Cooraboorama canberrae*). The assessment conducted by Capital Ecology included targeted surveys in accordance with relevant prescribed survey guidelines to determine the presence of these species in the subject land area of that assessment. This included the completion of (some) surveys within the northwestern margins of the subject site of this assessment.

The surveys completed by Capital Ecology failed to directly record any individuals of the species mentioned above (or any other threatened species) within the subject site of this assessment (i.e., Sections A and D). However, two threatened species were confirmed to be present in the broader subject land of Bonshaw, including the Striped Legless Lizard (SLL) and Golden Sun Moth (GSM). The SLL was recorded in Grids 6 and 9, located in PCT-ACT01 Zone 3 near the western/southwestern boundaries of the subject land (Figure 11). The GSM was recorded in the southeastern margins of the site. The extent of mapped habitat (completed by Capital Ecology, 2023) for these species across the Bonshaw property is shown in Figures 11 and 12. Of note, the extent of mapped habitat for the SLL includes the majority of the southwestern sections of the Bonshaw property, mapped as "Confirmed" habitat with the entire eastern margins of the site (east of the waterway

channel, and from the northern to southern property boundaries) mapped as "Characteristically Suitable" habitat for the SLL. In total, the Bonshaw property was by estimated Capital Ecology to support 42.31 ha of SLL habitat, including about 1.3ha of "Characteristically Suitable" habitat in the northern margins of Section D (Block A).

For the GSM, the Capital Ecology assessment mapped all (42.3ha) of the habitat areas listed above (i.e., both "Confirmed" and "Characteristically Suitable" habitat) for the SLL as "Characteristically Suitable" habitat for the GSM, with a smaller area (approx. 3.5ha) of this habitat mapped as "Confirmed" habitat for the GSM in the far southeastern margins of the Bonshaw property (see Figure 12).

Based on the desktop assessment and Capital Ecology findings, as well as on the observed habitat conditions completed for this current assessment there is considered to very little probability of occurrence of these threatened species within the northwestern margins of the site, within Section A of this SDA. This is based on the dominance of exotic species, high levels of grazing and lack of any natural tussock structure within this area, as well as the lack of any previous records of (any) threatened fauna species in the location of Section A.

There is, however, some potential (generally considered a low probability) of threatened species occurring in the northern margins of Section D (Block A) based on the mapping of *Characteristically Suitable* habitat in this area for both the SLL and GSM. This habitat mapping also extends across the far eastern areas and immediately adjacent to the mapped development boundaries of Section D generally. Based on this, further targeted surveys for the SLL and GSM are to be completed to confirm the presence of these species and to map the current condition and extent of these mapped habitats across Section D and the subject site more broadly. The results of these assessments will then be able to inform a detailed design for this area which avoids impacts to these species or their habitats.

#### **4.1.6 Ecological Connectivity**

The Bonshaw rural property in general, is likely to play a moderate role in maintaining ecological connectivity in the local area. Notably, the site supports numerous (planted) trees, some of which are large mature specimens (mostly Pine trees), as well as smaller, younger trees and some large shrubs, condensed into a relatively small area, while large areas surrounding the site for a distance of several hundred metres (or more to the west) are generally treeless open grasslands. These trees are therefore likely to be of some value or importance to local bird movements by providing temporary cover, roosting and shelter habitat, as well as some foraging habitat. However, there is no notable breeding habitat present at the site (although it is possible some small nests may occur in trees and were missed during the site survey).

Other nearby treed areas occur in HMAS Harman about 400m to the east of the main homestead area, as well as along the railway line and around the rural properties/homesteads along Woods Lane to the south. Given the generally high mobility of the common birds considered likely to occur in the locality, the treed parts of the site are, by themselves, not considered to be of vital (or high) importance in

maintaining connectivity for native birds in the area, but nevertheless are of some value in contributing to ecological connectivity for local birds.

The Bonshaw property, as a whole, is not considered likely to play an important role in maintaining ecological connectivity for native terrestrial fauna in the local area. Of note, the occurrence of Canberra Avenue along the entire northern boundary is likely to provide a significant barrier to safe local terrestrial fauna movements in/out of the site from the north (see Figures 13 and 14, as well as the *Current Biodiversity Values Plan* at Figure 15). Consequently, ecological connectivity and movement opportunities for native terrestrial fauna to the north of the site over Canberra Avenue would be limited to only highly mobile fauna such as Eastern Grey Kangaroos, and even then, these movements would not be regarded as safe.

The waterway channel in the eastern margins of the site may provide some role in maintaining connectivity for some smaller terrestrial and (semi) aquatic fauna. Of note, the waterway channel provides some higher vegetation cover levels which could assist the movement of small native fauna such as (common) amphibian and reptile species. Additionally, the waterway channel remains an essentially open, unmodified natural waterway channel until it flows into the Molonglo River approximately 400m downstream of the subject site, with the exception of two moderate-large culverts beneath the two separate inbound/outbound road corridors of Canberra Avenue. During periods of high flow, it is possible that some aquatic connectivity between the river and the waterway channel within the property could be sufficiently connected to allow movements of numerous mobile species such as Eels (*Anguilla sp*), Eastern Long-necked Turtles (*Chelodina longicollis*), Crayfish and possibly some (small) fish species in certain situations.

It is noted from the desktop assessment that the open grassland areas and riparian waterway corridor within the site, as well as the entire open grasslands on the adjacent land to the west, and the entire open space areas north of Canberra Avenue, including the Molonglo River corridor, are included within the mapped areas of the ACT Urban Ecological Network (see Figure 13). This mapping indicates areas of *potential* ecological connectivity within the Canberra urban environment. The treed areas about the homestead within the subject site, as well as the entire Canberra Avenue corridor to the north, including the median strip, and the majority of the HMAS Harman property are not mapped as being part of the network.

Based on the above assessment, the subject site, in and of itself, is considered to play a minor role in maintaining ecological connectivity in the locality.



Figure 11. Striped Legless Lizard survey and results by Capital Ecology (2023)

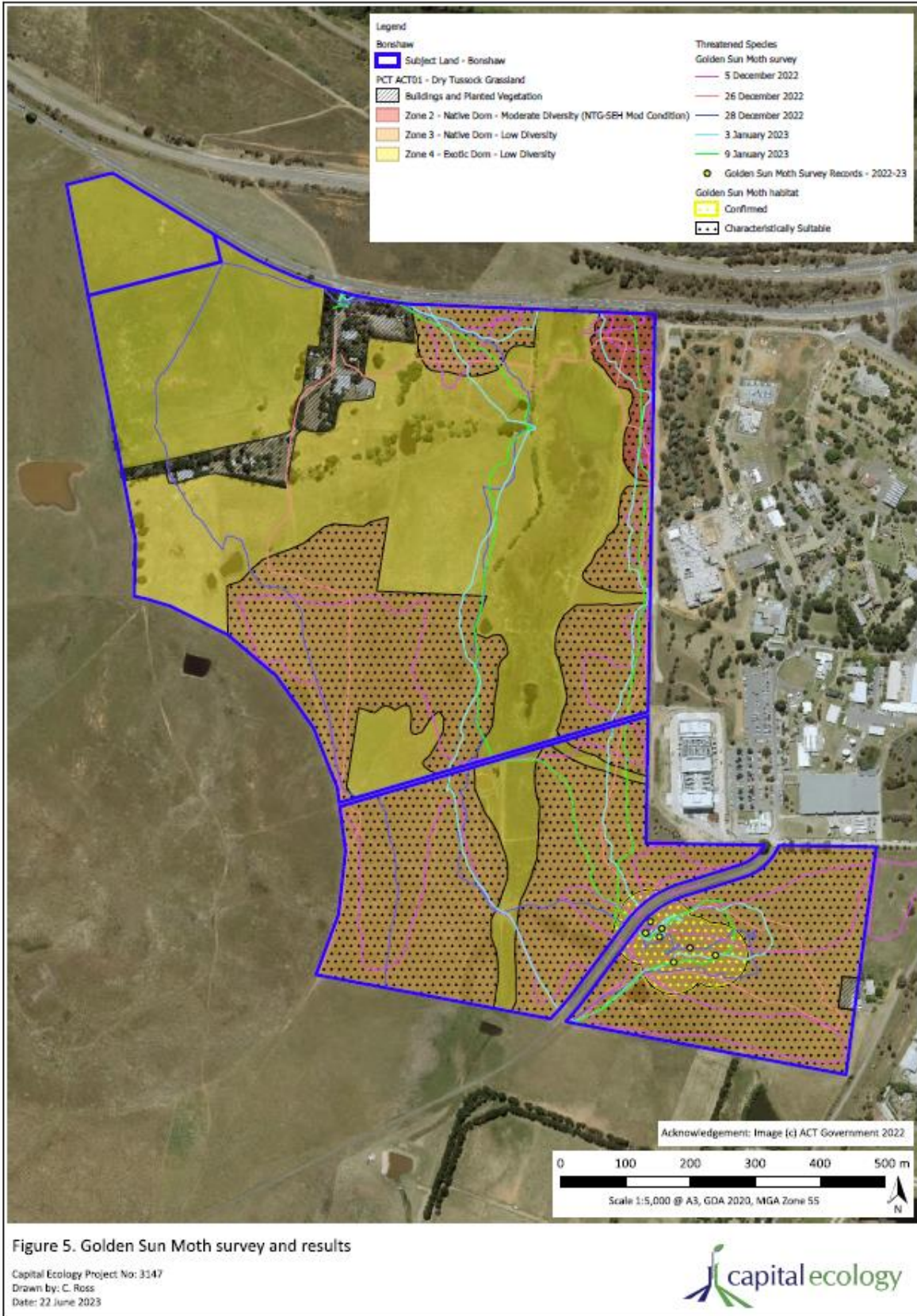


Figure 12. Golden Sun Moth survey and results by Capital Ecology (2023)



Figure 13. ACTmapi Urban Ecological Network mapping for the local area

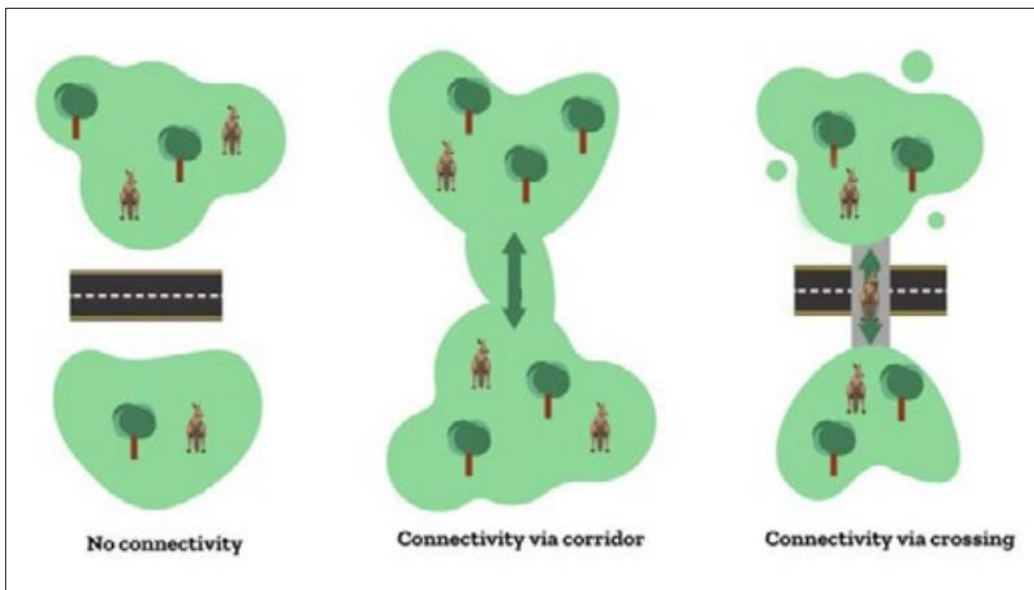


Figure 14. Types of ecological connectivity

(taken from BSUDG, ACT Gov, 2023)

#### **4.1.7 Consideration of ACT Ecological Dashboard Mapping**

A review of the ACT Ecological Network Dashboard shows that parts of the site have been mapped as potential habitat for a number of different fauna types (see Figures C.1 to C.7 at Appendix C). Of note, the entire site is mapped as Native bees connected habitat. The majority of the site's open grassland areas (i.e. the entire subject site excluding the treed parts of the site around the homestead buildings, and some of the waterbodies) have been mapped as *Grassland Reptiles - Connected Habitat*. The treed parts of the site around the homestead buildings as well as the narrow tree bands along some of the paddock fence lines, have been mapped as *Small Woodland Birds - connected habit*, as well as *Riparian Reptiles and Mammals - Connected Habitats* across much of the same area, but also including much of the low-lying, marshy parts of the drainage channel. Much of this same area has also been mapped as *Amphibians - Connected Habitat*. Two smaller area within the treed parts of the site around the homestead buildings has been mapped as *Small to Medium Terrestrial Mammals - Remnant Patches*. Some of the farm dams as well as the low-lying, marshy parts of the drainage channel have been mapped as *Small Native Fish - Connected Habitats*.

Based on the above and with consideration of the observed site values from the field-based assessment, it is believed that the primary ecological values of the site are essentially twofold as follows:

- Some moderate-level ecological value for birds, reptiles, mammals, amphibians and bees, associated with the existing trees and waterway channel
- Some moderate (to in some places potentially high) ecological values for grassland reptiles associated with the open, treeless grassland areas of the site and surrounds.

These existing values are represented in the Current Biodiversity Values Plan prepared for the subject site (see Figure 15). An assessment of the potential impacts of the proposed development on these values is provided below.

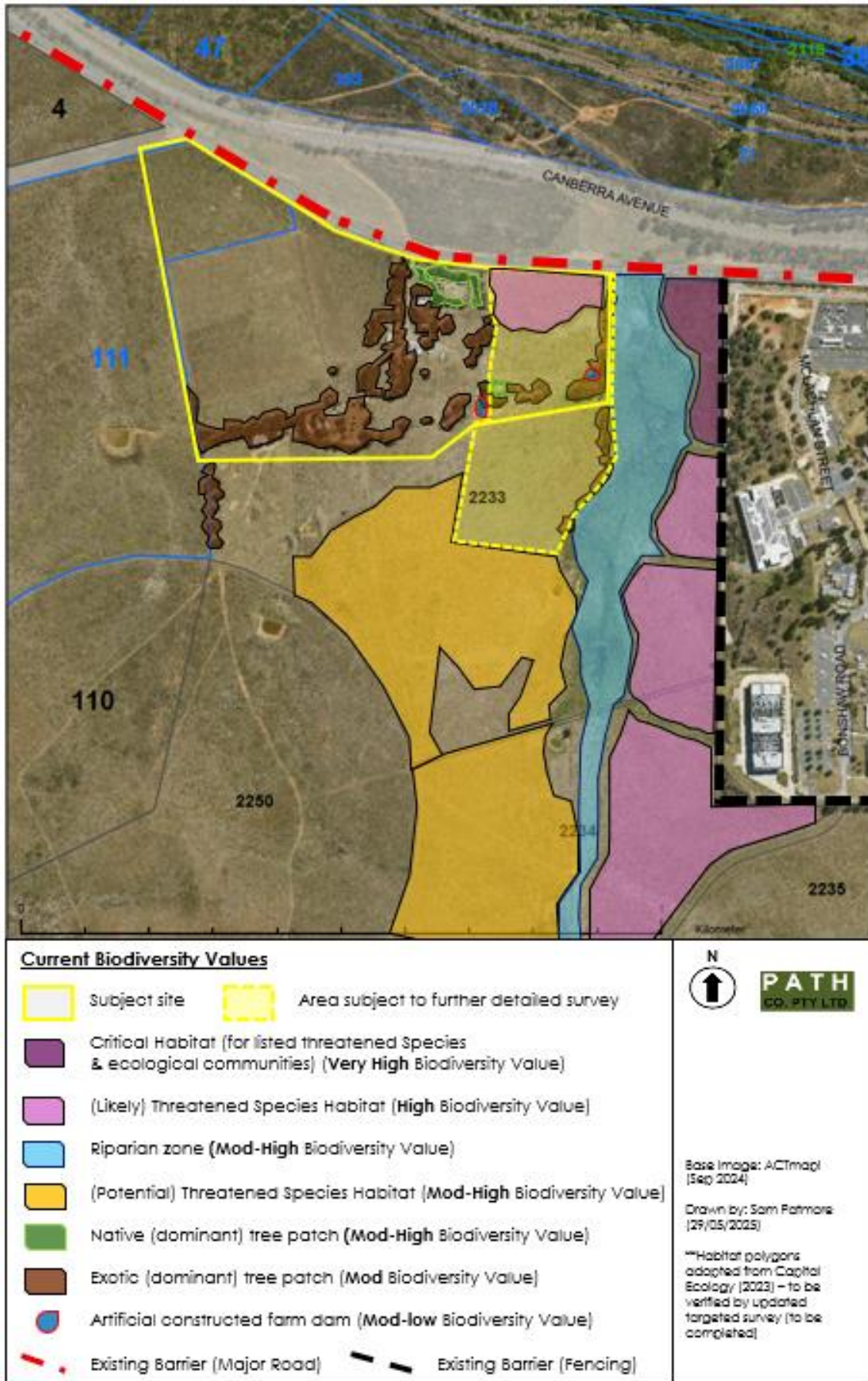


Figure 15. Current Biodiversity Values Plan

## 5. ASSESSMENT OF POTENTIAL IMPACTS OF DEVELOPMENT

The assessment of impacts provided below has been separated into two parts, as follows:

- **Part 1.** Impacts associated with the main SDA area which includes the proposed Section A, Blocks A, B, and C and bounded by Road 2, as well as the entry road (Road 1) and the proposed entry feature.
- **Part 2.** Impacts associated with the new Zone Substation and including the proposed new Fire Trail and associated works within Section D

For this assessment, a detailed assessment of the works associated with Part 1 have been provided below, while only a brief note on the potential impacts associated with the Part 2 (substation) works is provided below.

The separation of the level of impact assessment provided between the two parts is on the basis that the Part 1 area (Section A) was previously assessed as being (generally) devoid of any important/significant features in the earlier assessment by Capital Ecology (2023). The recent brief (Autumn) inspection conducted by PATH Co for this assessment also noted this Section A area as supporting a moderate-highly degraded grassland subject to grazing and an exotic-dominant groundcover. Accordingly, no further detailed ecological assessment of this area is considered necessary.

The assessment of impacts for the Part 2 (Substation works) area within Section D provided below is contextual only given that the proposed works occur in close proximity to important mapped habitats for the Striped Legless Lizard and Natural Temperate Grassland TEC. Accordingly, this area is to be subject to further targeted surveys for threatened species and ecological communities to be undertaken in accordance with prescribed survey guidelines, including being undertaken during the specified seasonal activity/survey monitoring periods (i.e. Spring-Summer) Notwithstanding this, based on the earlier assessment by Capital Ecology and the recent brief site inspection completed for this assessment, it is noted that there appears to be some areas within Section D that are highly modified and of generally low ecological value and which could potentially support the development of the Zone Substation. Accordingly, the Zone Substation works (and associated features including perimeter Fire Trail etc) are to be subject to future detailed design, including completion of supporting detailed ecological assessment (surveys).

### 5.1 Direct Impacts

#### 5.1.1 Impacts to vegetation values

##### Impacts to native trees

As noted in Section 4.1, a total of 287 trees were surveyed at the site, including both living and dead trees (and some stumps), as well as some larger shrubs. Of these, a

total of 58 are identified as native species, including 48 trees and three native shrubs within Part 1 (Section A) and seven native trees in Part 2 (Section D). Of the 48 native trees included in the tree survey table within Part 1 (Section A), five were unable to be physical located on site (and are likely small sapling specimens or dead).

The proposed development of Section A (Part 1 of this assessment) will result in the removal of all the existing trees on site, including all 48 native trees and three native shrubs. Refer to Appendix D for a summary table of the native trees at the site.

At this stage, the proposed development of Section D (Part 2 of this assessment), currently indicates that all of the existing trees, including the seven native trees, in this area are to be removed for the development.

The impacts of the proposed tree removal are considered to be of moderate consequence. Importantly, it is noted that none of the trees to be removed are considered to be rare or threatened, with all native species recorded being common varieties in the ACT region. Additionally, the treed areas of the site collectively do not form or support any Potential Threatened Woodland ecological community that would be affected by the tree removal.

While this removal will result in a substantial loss (involving the entire removal) of tree canopy cover, including loss of native tree canopy cover, it is notable that this area would historically have been a predominantly treeless Natural Temperate Grassland community as occurs to the immediate south and west of the property, and as observed in the historic aerial imagery. It is also noted that all of the native trees at the site are (most likely) planted specimens and are less than about 35-40 years old. Consequently, none of the native trees to be removed are regarded as remnant trees, and none of the trees would meet the definition of a Mature Native Tree<sup>5</sup> (MNT). Consequently, the removal of this tree cover, combined with the proposed replacement trees as part of the future site landscaping, is not considered likely to result in a significant or otherwise noteworthy ecological impact in terms of native tree species richness and diversity or the extent of occurrence of naturally formed native woodland vegetation communities.

In summary the overall amount of native tree removal, the total extent of native tree clearing associated with the proposed tree removals in Part 1 (Section A) is mapped at 2,450m<sup>2</sup>. The total extent of native vegetation clearing associated with the (possible) proposed tree removals in Part 2 (Section D) is mapped at approximately 400m<sup>26</sup>.

Impacts to native groundcover vegetation as well as impacts to fauna habitat values are discussed further below.

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<sup>5</sup> The definition of a 'mature' (native) tree (MNT) is taken from the Conservation Advice for the Key Threatening Process listing under the ACT NC Act for the LOSS OF MATURE NATIVE TREES (INCLUDING HOLLOW BEARING TREES) AND A LACK OF RECRUITMENT (Notifiable Instrument NI2018-536). Under the Conservation Advice, mature trees are considered to be those above 50 cm DBH. Mature trees of other species such as *Allocasuarina* (she oaks) and *Callitris* (cypress pines) are much smaller at maturity

<sup>6</sup> Subject to final detailed design and assessment.

## **Impacts to native groundcover vegetation – native grassland values**

As stated in Section 4.1, the groundcover vegetation at the site is highly modified and dominated by exotic pastures. As noted in the assessment findings, including both the desktop assessment (involving biodiversity database searches and review of the previous site assessment by Capital Ecology, 2023) and the recent brief site assessment, the understorey vegetation layer across the site supports very little native species diversity, with only 15 native groundcover species compared with 40 exotic groundcover species recorded in the Part 1 Section A SDA area<sup>7</sup>. Based on the recorded composition, the open (paddock) grassland areas are identified as forming part of the PCT ACT01: *Tablelands Dry Tussock Grassland*, but based on the conditions/values, would fall within Vegetation Zone ACT01: - *Zone 1.4 Exotic Dom Ground - Low Diversity*.

The proposed SDA will likely result in the (future/ultimate) removal of the entirety of the groundcover vegetation across the site within Section A. It is not known yet what the future disturbance footprint for works within Section D will entail, although it is expected that at least a moderate portion of the groundcover in Section D could be retained by future detailed design of this area, including the majority of the higher value grassland in Block A, Section D, as well as the majority of the grassland to the east of the waterway corridor, along the boundary to HMAS Harman (see Figures 10 - 12 and 15).

The total area of open grassland within the (Part 1) Section A parts of the current SDA in the northwestern margins of the study area (not including the treed areas about the homestead and outbuildings and driveways) is approximately 107,125m<sup>2</sup> (10.71ha). Based on the observed floristic composition and (conservatively) estimated average cover/abundance of approximately 15% native species cover in the open grassland areas of Section A, the (future/ultimate) extent of native vegetation clearing would be approximately 16,070m<sup>2</sup> (1.6ha). The area of open grassland in the southeastern margins of Section A, totals approximately 15,600 (1.56ha), with a (conservatively) estimated average cover of approximately 15% native, equating to an estimated 2,350m<sup>2</sup> of native groundcover vegetation removal.

Apart from the area of native vegetation removal already calculated for the native tree removal within the treed parts of the site, the remaining native groundcover vegetation removal within the treed parts of the site would be negligible and difficult to calculate. Much of this area is covered by either compacted dirt/gravel driveways, as well as large areas of the groundcover smothered in Pine needles. This area is approximately 43,800m<sup>2</sup> in total area, which, minus the area of native trees already counted (2,450m<sup>2</sup>) and minus buildings and driveways (estimated at approximately 5,000m<sup>2</sup>), and areas smothered in Pine needles (of approximately 2,500m<sup>2</sup>) leaves an area of approximately 33,850m<sup>2</sup>. Of this remaining groundcover area, less than 10%

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<sup>7</sup> Detailed floristic surveys are yet to be completed within the Part 2, Section D SDA area; to be undertaken in Spring-Summer 2025. A detailed assessment of floristic composition and impacts of development will be provided as part of a future detailed design DA.

of this would be comprised of native species, and thus, less than about 3,385m<sup>2</sup> of native vegetation would require removal in this area.

In summarising the above, a total of about 21,800m<sup>2</sup> (approx. 2.2ha) of native vegetation would be removed for the development of Section A and the main road network of the SDA,

A calculation of the total extent of native vegetation removal within the Section D area has not yet been completed as this total area of disturbance for future works is not currently known. Additionally, much of the Section D area has been recommended to be surveyed further for the potential presence of, including mapping the extent and condition of potential habitat for, the Striped Legless Lizard, Golden Sun Moth and the Natural Temperate Grassland ecological community. As a conservative estimate, the disturbance footprint (including the fire trail) is likely to be about 15,000m<sup>2</sup> (1.5ha), with an average native species component of about 30%<sup>8</sup> across this area, equating to an estimated native vegetation clearing area of approximately 4,500m<sup>2</sup> (0.4ha).

Based on the above, the total extent of native groundcover vegetation removal for both Parts 1 and 2 of the SDA (Sections A and D) is approximately 26,300m<sup>2</sup> (2.63ha).

It is notable however that based on the exotic dominant nature of the open grasslands as previously described, that this vegetation would not form a *Native Vegetation Area* as defined under Section 233 of the ACT NC Act. This has relevance to the statutory environmental approval requirements for the project discussed further below.

### **5.1.2 Impacts to fauna habitat values**

#### **Impacts to arboreal fauna habitats**

The impacts to arboreal fauna habitats will include the removal of the entire existing tree canopy cover at the subject site. As noted in Section 4.2, the arboreal habitat values of the trees are considered likely to be limited to some temporary roosting and foraging habitat for mainly common and widespread bird species. Importantly, the trees at the site were not observed to support any (noticeable) breeding habitat, with no tree hollows or (medium-large sized) nests seen in the trees.

The trees are likely to assist with the ecological connectivity in the local area for these birds, however, given the presence of other treed areas within 500m of the site, combined with the high mobility of these fauna types, the loss of these trees would not prevent movements by birds between other habitats more broadly or thereby result in the isolation of any treed/woodland habitats in the eastern districts of the ACT.

It is noted that the loss in tree cover will be temporary in nature, with future site landscaping proposed to incorporate a large number of suitable (native) trees along road verges, as well as in the entry statement garden (pocket park). Accordingly, an overall similar level of tree cover is expected to occur in this locality within about 30

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<sup>8</sup> Subject to confirmation through further detailed floristic survey of this area

years. It is believed that local avifauna populations can be adequately supported by other surrounding habitats in the locality until such time as the native tree cover has been replaced.

In terms of achieving suitable tree cover for the site, it is further noted this area would historically, have likely been a predominantly treeless open grassland. Given this, achieving a naturalised woodland community or areas of high tree cover, are not considered essential for maintaining the ecological values of this area. As noted in the desktop and site-based assessment, the (potential) important habitat values of the site are associated with the open grasslands within and surrounding the site which could support a number of threatened species. Impacts to the grassland and terrestrial fauna habitat values generally are discussed below.

### **Impacts to terrestrial fauna habitats**

The proposed development of Section A of the SDA (Part 1) will likely require the (future) disturbance/removal of the entire groundcover of this area (bounded by Road 2, and extending some distance beyond this for earthworks). This will include the disturbance/removal of the groundcover over approximately 123,000m<sup>2</sup> of open grassland as well as 43,800m<sup>2</sup> of modified areas of planted trees and existing buildings and structures.

As noted in Section 4.2, this area was observed to support marginal native terrestrial fauna habitat values, limited mainly to some foraging habitat for animals such as kangaroos, and some shelter/cover habitat for smaller common fauna (mostly reptiles) within and surrounding some of the buildings and structures.

Importantly no important breeding habitats were observed within the site, such as rocky outcrops, fallen timber piles, and there was very little structural diversity of the groundcover vegetation, with almost no natural tussock formation seen within the open grassland areas. Of particular note, the open grassland areas of Section A are considered unlikely to support any suitable habitat for listed threatened fauna species such as the Striped Legless Lizard and Golden Sun Moth, both of which are known from the broader local area, but not recorded in this area during targeted surveys by Capital Ecology in 2022.

For Section D (Part 2 of this assessment), it appears that the majority of the grassland areas are highly modified and unlikely to support suitable habitat for listed threatened species. However, some mapped potential habitat does occur in the northern and far eastern margins of Section D, as well as directly to the south, and bordering the Section D area. These areas of potential habitat (and immediately adjacent areas) should be subject to further survey before final detailed designs are completed for this part of the site.

### **Impacts to aquatic fauna habitats**

The proposed development will result in only negligible impacts to existing aquatic fauna habitat values at the site.

The development of Section A and boundary Road 2 will require the removal of an existing farm in the southeastern margins of this section. This dam is in relatively poor condition with minimal aquatic vegetation cover (at the time of survey) and generally poor water quality from frequent stock access. Given this, the decommissioning of this dam is not expected to result in any unacceptable impacts to aquatic fauna habitat values. Some common fauna (e.g. frogs) may be displaced however, other farm dams and aquatic habitats are present nearby for them to relocate to.

The future proposed development of Section D for the substation may (is likely to) result in the removal of another farm dam, also considered to be of limited habitat importance/value. The existing natural waterway channel in this area is expected to be protected from future development impacts through appropriate design and siting, with suitable setbacks and landscaped buffers to avoid indirect impacts (such as run-off) from occurring, while maintaining some ecological connectivity values along the waterway corridor.

### ***5.1.3 Impacts to ecological systems, functions and process***

The proposed development will result in some impacts to existing ecological functions, namely some (temporary) impact to moderate-value arboreal fauna roosting and foraging habitat, as well as some minor reduction in avifaunal habitat connectivity through the removal of the existing trees.

As noted in Section 5.1.2 above, the site does not support any important breeding habitats for native arboreal fauna and only marginal habitat for native terrestrial fauna. Consequently, the development will result in some reduction in the available extent of these (marginal) habitats, however, the surrounding lands support extensive areas of similar or better-quality natural grassland habitats, such that the reduction/loss of the marginal terrestrial habitat values within the development site would not be regarded as significant for any important local fauna populations. It is noted that some of the grassland areas in the north of Section D (Block A) as well as in the far-eastern margins of Section D as well as in the immediately adjacent lands (Block E) support potential habitat for a number of threatened grassland fauna, with further targeted surveys of these areas recommended to be completed before a final detailed design for the development of these areas is prepared.

As noted previously, the occurrence of Canberra Avenue already provides a large barrier to safe movements of terrestrial fauna, such that no viable connection exists to other habitats further to the north of the site. Other areas of potential connectivity associated with the waterway channel (see below) and other natural grassland areas to the west (and south) of the site will be preserved. Consequently, the development is not expected to result in any unacceptable impacts to ecological connectivity for native terrestrial fauna.

The site does not support any naturally occurring undisturbed vegetation communities, and importantly, does not contain any areas identified as belonging to a threatened ecological community, or habitat for any listed threatened flora species.

Aquatic habitats, and ecosystem functions associated with the drainage channel in the eastern parts of the site, including potential ecological connectivity, are expected to be protected from development impacts.

## **5.2 Indirect Impacts**

The proposed development has the potential to result in a number of indirect and/or offsite impacts associated with both the construction and operational (ongoing use) stages of the project. The include:

- Sediment and Erosion impacts including run-off of pollutants
- Weeds
- Human activities (noise, vibration, lighting, and traffic)

These are discussed in turn below.

### **5.2.1 Sediment and Erosion and Pollutant Run-off**

The proposed development has the potential to result in a number of indirect impacts, during both the construction and operational stages of the industrial land use development involving sediment and erosion and pollutant run-off. Sediment and erosion impacts could occur during the construction stage of the project (assessed as both the initial SDA, but having consideration also of the intended future development of industrial allotments) as a consequence of the removal of most/all of the existing groundcover vegetation and top-soil for site levelling etc. It is expected that these impacts will be able to be appropriately managed through the implementation of a Sediment and Erosion Control Plan (SECP) to be developed as part of a broader, overarching site Construction and Environmental Management Plan (CEMP) to be submitted and approved/endorsed by relevant government agencies prior to the commencement of works. The SECP is to have specific consideration of managing sediment and erosion impacts on the natural waterway channel in the eastern margins of the site.

In addition to the above, the development, including both during construction as well as throughout the ongoing use of the site for industrial land uses, has the potential for some pollutants to escape and enter adjacent natural environments. This could include accidental spills of chemicals used in the future industrial uses entering the stormwater system, or simply running off hard surfaces into adjacent areas. It is expected that these impacts will be managed during construction through the CEMP, including SECP details, as well as through the appropriate design of the site's stormwater systems which will ensure that any pollutants are captured by the system and delivered to appropriate areas for treatment.

### **5.2.2 Weeds**

As noted above, the proposed development (including both the initial SDA, but having consideration also of the intended future development of industrial allotments) will likely result in the removal of most/all of the existing groundcover vegetation and top-soil for site levelling etc. As also noted in Section 4.1, the site supports a number

of weeds and pest plants including notably African Lovegrass, as well as Saffron Thistle, St John's Wort, Paterson's Curse, Scotch Thistle and Blackberry.

The disturbance of these plants, including removal and movement of topsoil about the development area could result in the spread of these weeds, including increased spread into adjacent areas of higher quality native grassland habitats which could potentially support a number of threatened species. The risk of these impacts is primarily during construction, with the ongoing use/operational stage of the development considered to have only minimal potential for the spread of weeds into offsite/adjacent habitats. Given this, (standard) weed control measures are to be included in the site's CEMP to avoid or minimise these risks.

### ***5.2.3 Human activities (noise, vibration, lighting, and traffic)***

Both the construction and ongoing use of the site for industrial purposes will result in increased levels of human activity and could therefore generate increased levels of noise, vibration, lighting and traffic in the local area and extending into adjacent receiving environments.

It is expected that most of these impacts will occur during the day, although some nighttime use of the area will likely occur at times, while nighttime street lighting will also be included in the development.

Impacts associated with noise will be minimised as much as possible through adherence to the ACT Noise Protection Policy, for both construction and ongoing operational uses. Vibration would occur mainly during construction earthworks, although some heavy vehicle traffic (and potentially some industrial uses) could continue to generate some vibration on an ongoing basis. These impacts are unlikely to result in a significant adverse environmental impact, and no specific management plan is proposed to mitigate these impacts (noting much of the vibration will also involve noise generation and thereby be limited through the adherence to noise limits as mentioned above).

Impacts associated with lighting could potentially affect adjacent grasslands given there is currently (and historically) very little nighttime lighting penetration into these areas. These impacts will be minimised through sensitive lighting designs, including the use of directional nighttime lighting to avoid/limit light spill into adjacent grassland environments.

The development, including both during construction and ongoing use of the site for industrial purposes, will generate some traffic, including some heavy vehicle truck movements, within an area that currently is relatively devoid of such impacts. Given the assessed low-value terrestrial fauna habitats in the site area, including a lack of a suitable fauna movement corridor through the site to the north over Canberra Avenue, as well as the likely low traffic speeds within the new industrial subdivision area, these impacts are likely to be minor. Other than the implementation of traffic controls during construction and traffic speed limits during the operational stages, no further traffic management measures are considered necessary to be implemented

to avoid significant adverse environmental impacts to the local surrounding environment.

### **5.3 Summary of Impacts & Environmental Approval Requirements**

The likely impacts of the proposed development are summarised briefly as involving the following:

- Removal of almost 3ha of moderate-value native vegetation (in a *Non-native Vegetation Area*) across both Sections A and D, involving the following:
  - o loss of 2,850m<sup>2</sup> of native tree cover (56 trees total), comprised of 2,450m<sup>2</sup> (49 trees) in Section A and 400m<sup>2</sup> (7 trees) in Section D
  - o loss of 26,305m<sup>2</sup> of native groundcover vegetation comprised of:
    - 16,070m<sup>2</sup> of native groundcover vegetation in the northwestern margins of Section A
    - 2,350m<sup>2</sup> of native groundcover vegetation in the southeastern margins of Section A
    - 3,385m<sup>2</sup> of native groundcover vegetation in the treed parts of the site within central parts of Section A
    - (potentially) 4,500m<sup>2</sup> of native groundcover vegetation in Section D.
- Loss of moderate-value arboreal habitats, including the removal of up to (all) 287 existing native and exotic (planted) trees at the site, including the removal of 56 native trees (and some large native shrubs). These trees provide some shelter cover and marginal foraging habitat for (mostly) native birds, but do not provide any notable breeding/nesting habitat.
- Minor loss/reduction of low-value ecological connectivity; with connectivity to the north already interrupted by Canberra Avenue. The waterway channel in the eastern margins of the site will be retained and protected.
- Potential minor indirect impacts associated sediment and erosion and pollutant run-off entering native vegetation areas and natural waterways, introduction and spread of weeds into native vegetation areas, and impacts associated with human activities including noise, vibration, light pollution and traffic. These impacts are expected to be managed in accordance with a CEMP as well as adequate development designs to manage ongoing impacts associated with the industrial land uses.

In summarising the key aspects of the development impacts, and with consideration of the statutory approval requirements (particularly in relation to possible triggers under Schedule 1, Part 1.2 of the *Planning (General) Regulation 2023*) for an EIS/ESO to be completed/obtained the following is noted:

- The development of Section A of the SDA (and Section D, subject to further survey and detailed design) is considered unlikely to result in a significant impact to any protected (threatened) flora, fauna or ecological community. Accordingly, item 16 of Part 1.2 does not apply
- The development will result in the clearing of more than 0.5ha of native vegetation. However, as noted in Section 4.1, the vegetation at the site,

including both the open grasslands as well as the (planted) trees do not meet the requirements to be classified as a *Native Vegetation Area* (under Section 233 of the ACT NC Act). Specifically, more than 60% of the groundlayer vegetation is exotic (at any time of the year; see flora list at Appendix B). Accordingly, item 17 will not apply.

- The development is not located in a reserve. Accordingly, item 18 will not apply.
- The development will not result in the removal of any mature native trees or hollow-bearing trees and so a Key Threatening Process (associated with the *Loss of mature or hollow-bearing trees and lack of recruitment*) is unlikely to occur as a consequence of the development. Accordingly, item 25 will not apply.

In addition to the above, given no significant impacts to any nationally listed threatened species or ecological communities are anticipated, a referral of the action to the Commonwealth Government (DCCEEW) under the provisions of the EPBC Act is not considered necessary (for Section A, and subject to further targeted surveys and detailed design for Section D).

## **6. CONCLUSIONS AND RECOMMENDATIONS**

### **6.1 Assessment Summary and Conclusions**

Sustainable Data Resources commissioned PATH Co to undertake an assessment of the ecological values and biodiversity impacts associated with the proposed Subdivision Development Application (SDA) over the northern margins (being Sections A and D and associated internal road network) of the Bonshaw rural property at 722 Canberra Avenue, Symonston. The proposed SDA covers the north and northwestern margins of the property, within Block 2233 Jerrabomberra, and Block 12 Section 111, Symonston.

The SDA includes the creation of a new entrance from Canberra Avenue, internal roads and (currently) two large super-lots (to be further subdivided under a subsequent SDA), encompassing Section A of the SDA. Section D of the SDA includes provision for a future proposed zone substation in this area (subject to further detailed design).

The subject site has been previously assessed in detail by Capital Ecology which included various detailed targeted threatened species surveys and vegetation mapping conducted in Spring/Summer 2022 and early 2023.

The assessment findings did not identify any significant ecological values within the area of Section A of the SDA, while a number of important biodiversity values were identified in the far northern and eastern portions of Section D.

PATH Co undertook a brief (out of season) assessment of the site in May 2025 to validate the Capital Ecology mapping. This assessment confirmed that the open grassland areas in the northwestern margins of the site (within Section A and some of the associated road network) is dominated by exotic vegetation and is considered to be generally of low ecological value. Based on the exotic-dominant floristic composition of the grassland 'paddocks' these areas not considered to form part of the Natural Temperate Grassland (NTG) critically endangered ecological community. Given the degree of disturbance, including likely previous pasture improvement and ongoing livestock grazing these degraded grassland areas are considered unlikely to support any listed threatened flora species. Additionally, the lack of any natural tussock structure, and overall low biomass (sward height), the low cover and structural complexity indicate these highly modified grasslands are unlikely to support habitat for any listed threatened grassland fauna species. This conclusion is consistent with the earlier assessment of these areas within the Bonshaw property by Capital Ecology (2023).

The open grassland areas of Section D appear to support some (large) areas of low-value exotic grassland in the central margins of this Section which could provide opportunities for the development of a zone substation and possibly other uses in these areas. However, the northern and far eastern margins of this Section, including the majority of the area east of the waterway channel to the property boundary with HMAS Harman, has been identified by Capital Ecology as (potentially) supporting

'characteristically suitable' habitat for the threatened Stiped Legless Lizard and Golden Sun Moth, with 'confirmed' habitat for both these species to the south of the Section D area of the SDA. Given this, it has been recommended that further targeted surveys be completed in these areas for these species (in accordance with prescribed survey guidelines for each), to inform the future detailed designs for development of Section D.

The treed parts of the site, located about the existing driveway and homestead buildings/structures, was observed to support a mixed composition of planted native and exotic trees (and large shrubs). Based on a review of historic aerial imagery, it appears that the site previously supported a predominantly treeless grassland (possibly NTG) and that the earliest plantings commenced sometime in the 1950's likely to have comprised mostly exotic (mainly Pine) trees. Some native tree planting then appears to have occurred in the northern parts of the site between the main homestead and Canberra Avenue sometime between 1985 and 1990, indicating a maximum age of about 35-40 years for the native trees at the site. The native tree species planted are all common and widespread in the region. The tree survey plan includes a total of 287 trees (including some large shrubs), of which, 58 were identified as native (including 56 native trees and two native large shrub/small tree varieties).

Based on the tree species composition, and history as planted specimens in a likely natural grassland ecological community, combined with the highly modified groundcover vegetation in this area, the treed parts of the site would not meet the criteria to be mapped as part of a Box Gum Grassy Woodland ecological community under either ACT or Commonwealth legislation.

None of the trees at the site (native or exotic) were observed to support any tree hollows, and no (medium-large) nests were observed in any of the trees, although a final pre-clearance survey is recommended as part of the future CEMP for the site development to ensure no nests are present prior to commencement of construction. The proposed development (once the final SDA and subsequent development applications for buildings on lots have been approved) it is understood to require the ultimate removal of all of the existing trees present at the site.

The impacts of the proposed development across both Sections A and D are summarised as involving the removal of almost 3ha of moderate-value native vegetation. This includes the loss of 56 native trees with a combined tree canopy cover of 2,850m<sup>2</sup> (comprised of 49 native trees covering 2,450m<sup>2</sup> and 7 native trees covering 400m<sup>2</sup> in Section D). as well as the loss of 26,305m<sup>2</sup> of combined native groundcover vegetation (comprised of 21,805m<sup>2</sup> of native groundcover vegetation in Section A and (potentially) 4,500m<sup>2</sup> of native groundcover vegetation in Section D). As noted, the areas of groundcover vegetation to be impacted is considered to be of low ecological value and does not constitute potential habitat for any listed threatened species or ecological community. Other areas of (potentially) higher value grasslands, including potential habitat for threatened species in the northern and eastern margins of Section D are not currently proposed to be developed, with

further targeted surveys recommended in these areas to confirm the values and advise future detailed development designs.

Other potential impacts to biodiversity values include the loss of some marginal (resting and foraging) arboreal fauna habitats associated with the removal of the existing trees at the site (with no breeding/nesting habitat observed) and some limited habitat for smaller terrestrial fauna that may occupy some of the buildings and structures in the homestead area such as small reptiles and small (introduced) mammals such as rats and mice.

The site supports some limited aquatic habitats including the natural waterway channel in the east of the site, as well as two small artificial farm dams. While likely to provide some habitat for some common (semi) aquatic species like frogs, and some waterfowl, these aquatic habitats are not likely to support any important habitat for any listed threatened species. The natural waterway channel may however provide some important habitat values in relation to ecological connectivity, although this is affected somewhat by two large culverts beneath Canberra Avenue to the immediate north of the site. The proposed development is expected result in the removal of both of the farm dams, while the natural waterway channel is to remain undeveloped and protected from impacts associated with the future site development.

Overall, the site plays a minor role in relation to ecological connectivity in the local area. Most common birds that might utilise the existing trees are likely to be mobile enough to adapt to this loss and utilise other treed areas in surrounding lands. The presence of Canberra Avenue along the northern site boundary, however, suggests that terrestrial connectivity is highly limited and tenuous in this area, such that the development of the site is unlikely to significantly impact on terrestrial fauna movements. The existing culverts beneath Canberra Avenue will be retained and so may preserve some (marginal) connectivity for terrestrial (and aquatic) fauna.

Other indirect impacts associated with the development of the site, such as sediment and erosion and pollutant run-off entering native vegetation areas and natural waterways, introduction and spread of weeds into native vegetation areas, and impacts associated with human activities including noise, vibration, light pollution and traffic, are to be addressed in future SDA and design and siting development applications. These impacts are expected to be managed appropriately in accordance with a CEMP as well as adequate detailed development designs to manage ongoing impacts associated with the industrial land uses.

In summary, the proposed SDA, in its current form, is not expected to result in a significant impact to any listed threatened species or ecological communities. The removal of about 3ha of native vegetation (combined) will occur in an area that is not considered to be a *Native Vegetation Area* (under Section 233 of the ACT NC Act) given more than 60% of the groundlayer vegetation is exotic. The site also will not result in the significant loss or fragmentation of habitats, and would not remove any mature or hollow-bearing native trees. Accordingly, no Key Threatening Processes are considered likely to occur as a result of the SDA. Given these

conclusions, the SDA is not believed to be of a scale or type that would trigger the requirement for an EIS/ESO to be completed/obtained under Schedule 1, Part 1.2 of the Planning (General) Regulation. Similarly, a referral to the Commonwealth under the provisions of the EPBC Act is also not considered to be required.

Notwithstanding the above conclusions, further targeted surveys are recommended to be completed within parts of Section D to support future detailed design for development of this area and to avoid any potential significant impacts to listed threatened species or ecological communities. These are described further below.

## **6.2 Recommendations**

The following recommendations are provided to ensure that the future development of the site will be able to successfully avoid or mitigate potential impacts to listed threatened species and ecological communities, as well as other biodiversity values generally.

- Targeted surveys for threatened species, including specifically, the Striped Legless Lizard and Golden Sun Moth, as well as current/updated vegetation and habitat assessments should be conducted within Section D (and adjacent areas of Section E) to confirm the occurrence of these species and extent of potential habitat. Future detailed design plans for the development should be informed by these surveys to ensure that impacts to these species and their habitats is avoided. Design features should be include avoidance of both direct impacts (i.e. clearing/removal of habitats) and indirect impacts (such as pollutant run-off from the industrial uses into adjacent habitats).
- Prior to commencement of any works, a Construction Environmental Management Plan is to be prepared and (at a minimum) should contain the following:
  - o Sediment and Erosion Control Plan
  - o Weed Management Plan
  - o Pre-clearance surveys (focussing mainly on existing trees and shrubs to ensure that no new or small nests not picked up in the original site assessments are identified and appropriate management actions put in place to mitigate impacts to these features.

## 7. REFERENCES AND INFORMATION SOURCES

ACT Government Action Plans (various) and associated Conservation Strategies established under the ACT Nature Conservation Act 2014, including notably:

- *Nature Conservation (Native Grassland) Action Plans 2017 (DI2017-288)*
- *Nature Conservation (Native Woodland) Action Plans 2019 (DI2019-255)*
- *Nature Conservation (Threatened Ecological Communities and Species) Action Plan 2013 (No 1) (DI2013-277)*
- *Nature Conservation (Loss of Mature Native Trees Key Threatening Process) Action Plan 2023 (DI2023-230) & Nature Conservation (Loss of Mature Native Trees) Conservation Advice 2018 (NI2018-536)*
- *ACT Aquatic and Riparian Conservation Strategy and Action Plans (ACT Gov, 2018)*

ACTmapi Environment Map (<https://apps.vertigisstudio.com/web/>)

Atlas of Living Australia (ALA: 2018) Spatial Portal. <http://spatial.ala.org.au> accessed in May 2025.

Baines, g., Webster, m., Cook, E., Johnston, L and Seddon, J. (2013). THE VEGETATION OF THE KOWEN, MAJURA AND JERRABOMBERRA DISTRICTS OF THE AUSTRALIAN CAPITAL TERRITORY Prepared for: Conservation Planning and Research, ACT Government Technical Report 28 November 2013 Conservation Planning.

Canberra Nature Map <https://canberra.naturemapr.org/> (accessed May 2025)

Capital Ecology (2023). *Bonshaw, Jerrabomberra – Ecological Values and Constraints Assessment*. Final 01 – July 2023. Prepared for Brite Developments Pty Ltd. Authors: C. Ross and R. Speirs. Project no. 3147.

NSW Office of Environment & Heritage (2025)- Threatened Species profiles. <https://www.environment.nsw.gov.au/threatenedspeciesapp/>

## APPENDIX A. THREATENED SPECIES EVALUATIONS

The tables in this appendix present the habitat evaluation for threatened species, ecological communities and endangered populations included in the database search results using a 5 km buffer around project site, for those identified as potentially occurring in the area according to the Commonwealth EPBC *Protected Matters Search Tool*<sup>9</sup>, as well as records of species in the local area included in the ACT Government's ACTmapi online mapping database.

It was assumed that this search area and use of government databases would bring in all of the relevant species, although the list of species below omits many irrelevant ones found in aquatic habitats (i.e. fish species), or typically found within large waterbodies or coastal areas as these habitats are not present at the site.

The likelihood of occurrence is based on presence of habitat, proximity of nearest records and mobility of the species (where relevant).

A summary assessment of potential impacts to these entities is provided here as an early consideration of whether further survey or assessment may be required.

The following classifications are used:

### Presence of habitat

- Present: Potential or known habitat is present within the study area
- Marginal: Habitat present is not typical but may be suitable or habitat type is suitable but condition and microhabitat requirements of species are not present
- Absent: No potential or known habitat is present within the study area

### Likelihood of occurrence

- None: Species known or predicted within the locality but no suitable habitat present within the study area
- Unlikely: Species known or predicted within the locality but unlikely to occur in the study area
- Possible: Species could occur in the study area
- Present: Species was recorded during the field investigations

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<sup>9</sup> This online tool is designed for the public to search for matters protected under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). It is managed by the Commonwealth Department of the Environment, Water, Heritage and the Arts.

## A.1 Evaluation of the likelihood of EPBC threatened flora species and ecological communities

The flora species and Threatened Ecological Community (TEC) list included in the assessment table below is derived from a search of the EPBC Protected Matters Search Tool, utilising a 10km buffer around the subject site.

Species	Description of habitat	Presence of habitat	Likelihood of occurrence	Potential for Impact? AoS Required?
<b>Flora</b>				
River Swamp Wallaby-grass <i>Amphibromus fluitans</i> V EPBC	River Swamp Wallaby-grass grows mostly in permanent swamps and also lagoons, billabongs, dams and roadside ditches. The species requires moderately fertile soils with some bare ground; conditions that are caused by seasonally-fluctuating water levels (NSW OEH 2013h).	Marginal – within waterway channel only	Unlikely – no nearby records	No No
Canberra Spider Orchid <i>Caladenia actensis</i> CE EPBC	The Canberra Spider-orchid grows on shallow gravelly brown clay loam soils of volcanic origin. Plants occur amongst a ground cover of grasses, forbs and low shrubs, often among rocks. It grows in transitional vegetation zones between open grassy woodland (dominated by <i>Eucalyptus blakelyi</i> , <i>E. melliodora</i> , and <i>E. pauciflora</i> ) and dry sclerophyll forest (dominated by <i>E. rossii</i> )	Marginal	Unlikely – no nearby records	Low No
Mauve Burr-daisy <i>Calotis glandulosa</i> V EPBC	The distribution of the Mauve Burr-daisy is centred on the Monaro and Kosciuszko regions. There are three known sites in the upper Shoalhaven catchment.  It is found in montane and subalpine grasslands in the Australian Alps (dominated by <i>Poa</i> spp.), and montane or natural temperate grassland dominated by Kangaroo Grass ( <i>Themeda australis</i> ) and Snow Gum ( <i>Eucalyptus pauciflora</i> ) Woodlands on the Monaro and Shoalhaven area.  It appears to be a coloniser of bare patches, which explains why it often occurs on roadsides and apparently common on roadsides in parts of the Monaro, though it does not persist for long in such sites. It does not appear to persist in heavily-grazed pastures of the Monaro or the Shoalhaven area.	Absent	Unlikely	No No

Species	Description of habitat	Presence of habitat	Likelihood of occurrence	Potential for Impact? AoS Required?
Trailing Hop-bush <i>Dodonaea procumbens</i> V EPBC	<p>The Trailing Hop-bush is widely but patchily distributed across south-eastern Australia, where it occurs in New South Wales, Victoria and South Australia.</p> <p>This species grows in low-lying, often winter-wet areas in woodland, low open forests, heathland and grasslands, on sands and clays.</p> <p>Most populations in New South Wales occur either in natural grassland or grassy woodland of Snow Gum (<i>Eucalyptus pauciflora</i>), usually on crests or slopes and on tilted sediments.</p>	Marginal	None – obvious species and wasn't seen	No No
Black Gum <i>Eucalyptus aggregata</i> V EPBC	<p>The Black Gum is a rare species found from Capertee and Bathurst in central New South Wales, south through the central and southern tablelands.</p> <p>It typically grows in low lying areas with soils that are generally poorly drained, alluvial or swampy, and also in areas where there are natural frost hollows.</p>	Marginal	None – obvious species and wasn't seen	No No
Spiny Peppercress <i>Lepidium aschersonii</i> V EPBC	<p>This species is not widespread, occurring in the marginal central-western slopes and north-western plains regions of NSW (and potentially the south-western plains). It is distinguished from other <i>Lepidium</i> species by the presence of tiny spines which give the mature plants an intricate appearance.</p> <p>It is found on ridges of gilgai clays dominated by Brigalow (<i>Acacia harpophylla</i>), Belah (<i>Casuarina cristata</i>), Buloke (<i>Allocasuarina luehmannii</i>) and Grey Box (<i>Eucalyptus microcarpa</i>). In the south has been recorded growing in Bull Mallee (<i>Eucalyptus behriana</i>). It is typically recorded in grey loamy clays. Often the understorey is dominated by introduced plants, and vegetation structure varies from open to dense, with sparse grassy understorey and occasional heavy litter.</p>	Absent	Very unlikely. Species has not been previously recorded from ACT.	No No

Species	Description of habitat	Presence of habitat	Likelihood of occurrence	Potential for Impact? AoS Required?
Ginninderra Peppercress <i>Lepidium ginninderense</i> V EPBC	This short-lived forb species grows in Natural Temperate Grasslands and is known from only a small number of sites including the Belconnen Naval Station, on the Ginninderra Creek floodplain, as well as in the Jerrabomberra Valley, on the eastern side of Jerrabomberra Creek.	Marginal – but degraded.	Unlikely - the species has been recorded in the locality but was not observed during targeted surveys. Habitat likely too degraded	Low No
Basalt Peppercress <i>Lepidium hyssopifolium</i> E EPBC	This short-lived forb species occurs in a variety of habitats including woodland with a grassy understorey and grassland.  It appears to respond to disturbance, having appeared after soil disturbance at one site near Bungendore.	Marginal	Unlikely – no nearby records	Low No
Hoary Sunray <i>Leucochrysum albicans</i> <i>subsp. albicans var. tricolor</i> E EPBC	This species may be locally common on the Southern Tablelands. It grows in natural and secondary grasslands and grassy woodlands, often colonising disturbed sites such as road verges and other areas with thin soils, but does not persist well in grazed situations.	Present	Unlikely– obvious species and was not observed at the site (but known from nearby areas )	Low No
Silver Sword Lily <i>Neoastelia spectabilis</i> V EPBC	The Silver Sword Lily is a very rare species that is restricted to the eastern edge of the New England Tablelands in NSW. It occurs at high (900 to 1150 m) altitudes on precipitously steep slopes, often around waterfalls and along cold, dark creek lines on the edge of the New England Plateau.	Absent – outside known altitudinal range	None	No No

Species	Description of habitat	Presence of habitat	Likelihood of occurrence	Potential for Impact? AoS Required?
Pale Pomaderris <i>Pomaderris pallida</i> E-EPBC	The Pale Pomaderris is currently known from the ACT, southern NSW and eastern Victoria. In the ACT, this species is scattered along the Cotter, Paddys and Murrumbidgee Rivers and through the Molonglo Gorge. The Pale Pomaderris is found at numerous small sites along the plateau edge and very steep upper slopes and cliffs of river valleys at 480-600 m above sea level. The ACT sites are only on the eastern banks of the rivers, with an aspect ranging from north-westerly through westerly to southerly. The soils are shallow, pale brown sandy loams over granite rock and large, exposed granite boulders may be present.	Marginal	None. Obvious shrub and wasn't seen.	No No
Tarengo Leek Orchid <i>Prasophyllum petilum</i> E-EPBC	Known from three sites on the Southern Tablelands, at Boorowa, and Captain's Flat in NSW and Hall in the ACT, growing in grassland, Box-Gum Woodland or moist grassy flats, with kangaroo grass or wallaby grasses ( <i>Austrodanthonia spp</i> ). Flowers Oct-Nov.	Marginal – understorey not suitable	Unlikely – not seen at site.	Low No
Button Wrinklewort <i>Rutidosis leptorhynchoides</i> E EPBC	This perennial forb grows in scattered populations in natural temperate grassland or grassy woodland on the Southern Tablelands. It is known from the Red Hill Nature Reserve	Marginal – groundcover too modified/disturbed	Unlikely – species was not observed at the site	Low No
Large-fruit Fireweed, Large-fruit Groundsel <i>Senecio macrocarpus</i> V EPBC	The Large-fruit Groundsel is a small perennial plant endemic to south-eastern Australia, where it occurs primarily in South Australia and Victoria, and formerly occurred in Tasmania. It is also known from a small number of records in the NSW Southern Tablelands, north of the ACT and west of Lake George. It occurs in a variety of habitats, including grasslands, sedgelands, shrublands and woodlands, generally on sparsely vegetated sites on sandy loam to heavy clay soils, often in depressions that are waterlogged in winter.	Marginal	None - species was not observed at the site and has not been previously recorded from ACT.	No No

Species	Description of habitat	Presence of habitat	Likelihood of occurrence	Potential for Impact? AoS Required?
Small purple-pea <i>Swainsona recta</i> E EPBC	Grows in grassland or grassy woodland on the Southern Tablelands and western slopes.	Marginal – site likely too degraded	Unlikely - not found within the site and no nearby records	Low No
Austral Toadflax <i>Thesium australe</i> V EPBC	This species is found in small populations across eastern NSW, on the coast and from the Northern to Southern Tablelands. It occurs in grassland or grassy woodland, sometimes in damp sites, and is almost invariably associated with kangaroo grass ( <i>Themeda australis</i> ).	Marginal	Unlikely - not found within the site and no nearby records	Low No
<b>EEC's</b>				

Species	Description of habitat	Presence of habitat	Likelihood of occurrence	Potential for Impact? AoS Required?
Natural Temperate Grassland of the Southern Tablelands of NSW and the Australian Capital Territory	<p>Natural Temperate Grassland occurs on ridges, crests, hillsides, undulating plains, valleys and lower slopes, creeks, drainage lines and river flats. It is usually associated with heavy textured soils with low nutrient levels.</p> <p>Natural temperate grassland comprises of closed grassland, grassland and open grassland whose biomass is <u>dominated</u> by two or more of the perennial native tussock grasses <i>Themeda triandra</i> (Kangaroo Grass), <i>Austrodanthonia spp</i> (wallaby grasses), <i>Austrostipa spp</i> (speargrasses), <i>Bothriochloa macra</i> (Red Grass, Red-leg Grass) and/or <i>Poa spp</i> (snowgrasses). Mature tussock grasses range in height from moderately tall (25–50 cm) to tall (50–100 cm) (Commonwealth Endangered Species Scientific Subcommittee 2000). The spaces between the dominant grass tussocks are occupied by graminoids (grasses and grass-like plants) and a wide range of forbs (herbaceous, non-graminoid plants) which may comprise up to 70% of all plant species and form a distinct, lower layer of vegetation (Environment ACT 2005). Many forbs are from the daisy family (Asteraceae), or are lilies or native legumes.</p> <p>The perennial <u>native grasses together with the native graminoids and forbs usually comprise more than 50% of the total plant cover</u> (Environment ACT 2005).</p>	<p>Absent – within SDA Section A condition of vegetation not consistent with mapping criteria.</p> <p>Present in nearby areas</p>	<p>Possible – see vegetation assessment</p>	<p>No</p> <p>No</p> <p>TEC unlikely to occur within disturbance footprint of SDA</p>
Box Gum Woodland CEC EPBC	<p>White Box, Yellow Box, Blakely's Red Gum Woodland (commonly referred to as Box-Gum Woodland) is an open grassy woodland community (sometimes occurring as a forest formation) , in which the dominant species are White Box <i>Eucalyptus albens</i>, Yellow Box <i>E. melliodora</i> or Blakely's Red Gum <i>E. blakelyi</i>.</p> <p>Groundcover vegetatuib in areas of TEC are predominantly native, and/or with areas supporting at least 20 mature native trees per hectare or natural regeneration.</p>	<p>Absent - condition of vegetation not consistent with mapping criteria</p>	<p>None – see vegetation assessment</p>	<p>No</p> <p>No</p>

Species	Description of habitat	Presence of habitat	Likelihood of occurrence	Potential for Impact? AoS Required?
<p>CE EPBC = listed as Critically Endangered under the Commonwealth <i>Environment Protection &amp; Biodiversity Conservation Act 1999</i>.</p> <p>E EPBC = listed as Endangered under the Commonwealth <i>Environment Protection &amp; Biodiversity Conservation Act 1999</i>.</p> <p>V EPBC = listed as Vulnerable under the Commonwealth <i>EPBC Act 1999</i></p>	<p>CEEC EPBC = Critically Endangered Ecological Community listed under the Commonwealth <i>EPBC Act 1999</i></p> <p>EEC EPBC = Endangered Ecological Community listed under the Commonwealth <i>EPBC Act 1999</i></p>			

## A.2 Evaluation of the likelihood and extent of impact on threatened fauna

The fauna species list is derived from a search of the EPBC Protected Matters Search Tool, utilising a 10km buffer around the subject site. With regards to the evaluations provided below for each species included in the search results, fish species and marine waterbirds/shorebirds were collectively discounted from the evaluations given the complete lack of any identifiable suitable aquatic habitats that could potentially support these species.

Species and Status	Description of habitat <sup>10</sup>	Presence of habitat	Likelihood of occurrence	Potential for Impact? AoS Required?
<b>Aves</b>				
<p>Regent Honeyeater <i>Anthochaera phrygia</i> E EPBC</p>	<p>The Regent Honeyeater mainly inhabits temperate woodlands and open forests of the inland slopes of south-east Australia, particularly Box-Ironbark woodland, and riparian forests of River She-oak. Birds are also found in drier coastal woodlands and forests in some years. There are only three known key breeding regions remaining:</p>	<p>Marginal. The site may provide some very limited foraging habitat but does not provide breeding habitat,</p>	<p>Unlikely</p>	<p>Low No</p>

Species and Status	Description of habitat <sup>10</sup>	Presence of habitat	Likelihood of occurrence	Potential for Impact? AoS Required?
	north-east Victoria (Chiltern-Albury), and in NSW at Capertee Valley and the Bundarra-Barraba region. The species is a generalist forager, mainly feeding on nectar from a wide range of eucalypts and mistletoes. Key eucalypt species include Mugga Ironbark, Yellow Box, Blakely's Red Gum, White Box and Swamp Mahogany. Regent Honeyeaters usually nest in horizontal branches or forks in tall mature eucalypts and Sheoaks or in mistletoe clumps.			
Southern Whiteface <i>Aphelocephala leucopsis</i> V - EPBC Act	Southern Whiteface occurs across most of mainland Australia south of the tropics, from the north- eastern edge of the Western Australian wheatbelt, east to the Great Dividing Range. It lives in a wide range of open woodlands and shrublands where there is an understorey of grasses or shrubs, or both. These areas are usually in habitats dominated by acacias or eucalypts on ranges, foothills and lowlands, and plains. It forages almost exclusively on the ground, favouring habitat with low tree densities and an herbaceous understorey litter cover.	Marginal – lack of suitable understorey	Unlikely	Low No
Gang-gang Cockatoo <i>Callocephalon fimbriatum</i> E EPBC	During summer, Gang-gang Cockatoos are found in tall mountain forests and woodlands, with dense shrubby understoreys. In winter, Gang-gangs will move to lower altitudes into drier, more open forests and woodlands. They feed mainly on seeds of native and introduced trees and shrubs, with a preference for eucalypts, wattles and introduced hawthorns. They will also eat berries, fruits, nuts and insects and their larvae. They nest in hollows of suitable trees.	Marginal. The site may provide some limited foraging habitat but does not provide breeding habitat.	Possible – occasional visitor only	Low No
South-eastern Glossy Black-Cockatoo <i>Calyptorhynchus lathami lathami</i> V EPBC	South-eastern glossy black cockatoos are uncommon but widespread. They can be found from Mitchell, Queensland, through eastern New South Wales to East Gippsland, Victoria. They feed almost exclusively on the seeds of sheoaks ( <i>Allocasuarina</i> spp. and <i>Casuarina</i> spp.), usually relying on one or two species within a region. They are hollow nesters, utilising large hollows in both living and dead eucalypt trees.	Absent – no (Allo)Casuarina sp. on site, therefore no notable foraging habitat and does not provide breeding habitat.	Low	Low No

Species and Status	Description of habitat <sup>10</sup>	Presence of habitat	Likelihood of occurrence	Potential Impact? for AoS Required?
<p>Brown Treecreeper (south-eastern)</p> <p><i>Climacteris picumnus victoricae</i></p> <p>V – EPBC Act</p>	<p>Brown treecreepers (south-eastern) are endemic to south-eastern Australia from the Grampians in western Victoria, through central New South Wales to the Bunya Mountains in Queensland, and from the coast to the inland slopes of Great Dividing Range. In NSW the western boundary of the range of <i>Climacteris picumnus victoricae</i> runs approximately through Corowa, Wagga Wagga, Temora, Forbes, Dubbo and Inverell and along this line the subspecies intergrades with the arid zone subspecies of Brown Treecreeper <i>C. p. picumnus</i>. Brown treecreepers (south-eastern) occupy dry open eucalypt forests and woodlands. The subspecies mainly inhabits woodlands dominated by stringybarks or other rough-barked eucalypts, usually with an open grassy understorey, sometimes with one or more shrub species. They also occur in mallee, forests and woodlands subject to periodic inundation, e.g., river red gum (<i>E. camaldulensis</i>) woodlands with an open understorey of acacias, saltbush, lignum, cumbungi and grasses in the upper Murray River.</p> <p>Brown treecreepers (south-eastern) nest and roost in naturally occurring tree cavities in a variety of eucalypt species.</p>	<p>Marginal. Vegetation generally not suitable</p>	<p>Low</p>	<p>Low</p> <p>No</p>
<p>Grey Falcon</p> <p><i>Falco hypoleucos</i></p> <p>V EPBC</p>	<p>The species occurs in arid and semi-arid Australia, including the Murray-Darling Basin, Eyre Basin, central Australia and Western Australia. The species is mainly found where annual rainfall is less than 500 mm, except when wet years are followed by drought, when the species might become marginally more widespread, although it is essentially confined to the arid and semi-arid zones at all times.</p> <p>The species frequents timbered lowland plains, particularly acacia shrublands that are crossed by tree-lined water courses and has been observed hunting in treeless areas and frequents tussock grassland and open woodland, especially in winter.</p>	<p>Marginal. The site may provide some foraging habitat but does not provide breeding habitat, no nests seen.</p>	<p>Possible – occasional visitor only</p>	<p>No</p> <p>No</p>
<p>Painted Honeyeater</p> <p><i>Grantiella picta</i></p>	<p>The Painted Honeyeater is nomadic and occurs at low densities throughout its range. The greatest concentrations of the bird and almost all breeding occurs on the inland slopes of the Great</p>	<p>Absent. Lack of suitable woodland vegetation and no mistletoe seen on trees.</p>	<p>Unlikely</p>	<p>Low</p> <p>No</p>

Species and Status	Description of habitat <sup>10</sup>	Presence of habitat	Likelihood of occurrence	Potential for Impact? AoS Required?
V EPBC	Dividing Range in NSW, Victoria and southern Queensland. During the winter it is more likely to be found in the north of its distribution. The species inhabits Boree, Brigalow and Box-Gum Woodlands and Box-Ironbark Forests. A specialist feeder on the fruits of mistletoes growing on woodland eucalypts and acacias. Prefers mistletoes of the genus <i>Amyema</i> .			
White-throated Needletail <i>Hirundapus caudacutus</i> V EPBC	The White-throated Needletail breeds in Asia, from central and south-eastern Siberia and Mongolia, east to the Maritime Territories of Russia, Sakhalin and the Kuril Islands and south to northern Japan and north-eastern China.  Most White-throated Needletails spend the non-breeding season in Australasia, mainly in Australia and is widespread in eastern and south-eastern Australia. In Australia, the White-throated Needletail is almost exclusively aerial, from heights of less than 1 m up to more than 1000 m above the ground. Because they are aerial, it has been stated that conventional habitat descriptions are inapplicable, but there are, nevertheless, certain preferences exhibited by the species. Although they occur over most types of habitat, they are probably recorded most often above wooded areas, including open forest and rainforest.	Marginal	Unlikely - mainly aerial species/rarely comes to ground. Breeds elsewhere	Low No
Swift Parrot <i>Lathamus discolor</i> E EPBC	Abundance of flowering eucalypts and banksias is required by this species, whose range includes southern Queensland to South Australia. This nectar feeder can gather in large groups when feed trees are in flower. It breeds in Tasmania and migrates to the south-east mainland between March and October.	Marginal. Some flowering trees in the area. No breeding habitat (breeds only in Tasmania)	Unlikely	Low No
<i>Melanodryas cucullata cucullata</i> South-eastern Hooded Robin, Hooded Robin (south-eastern) E – EPBC Act	Hooded Robins (south-eastern) occur in south-eastern Australia from far south-east Queensland to Yorke Peninsula, South Australia, intergrading with <i>M. c. picata</i> in the southern Murray-Darling basin. They prefer dry eucalypt and acacia woodlands and shrublands with an open understorey, some grassy areas and a complex ground layer. They avoid woodlands with tall trees or dense tree cover but sometimes occur in tall, dense heaths with scattered	Marginal. Understorey lacks complexity of native grasses	Unlikely	Low No

Species and Status	Description of habitat <sup>10</sup>	Presence of habitat	Likelihood of occurrence	Potential for Impact? AoS Required?
	open areas. Nests comprise small, neat cups of bark and grasses bound with webs.			
<i>Neophema chrysostoma</i> Blue-winged Parrot V – EPBC Act	Breeds on mainland Australia south of the Great Dividing Range in southern Victoria from Port Albert in Gippsland west to Nelson, and sometimes in the far south-east of South Australia, and the north-western, central and eastern parts of Tasmania. During the non-breeding period, from autumn to early spring, birds are recorded from northern Victoria, eastern South Australia, south-western Queensland and western New South Wales with some birds reaching south-eastern New South Wales and eastern Victoria, particularly on the southern migration. While on the mainland, mobile flocks feed in saltmarsh and rough pasture in coastal Victoria. They are known to move more than 100 km inland during winter to feed in semi-arid chenopod shrubland and sparse grassland.  Nests are made in hollows, preferably with a vertical opening, in live or dead trees or stumps.	Absent– lack of suitable foraging habitat and no breeding habitat	Unlikely.	Low No
Superb Parrot <i>Polytelis swainsonii</i> V EPBC	The Superb Parrot is found throughout eastern inland NSW. On the South-western Slopes their core breeding area is roughly bounded by Cowra and Yass in the east, and Grenfell, Cootamundra and Coolac in the west, although the species has been moving south into the ACT in recent years (OEH, 2018). Inhabits Box-Gum, Box-Cypress-pine and Boree Woodlands and River Red Gum Forest. Nests in large tree hollows. Species known to be used for nesting are Blakely's Red Gum, Yellow Box, Apple Box and Red Box. Feed in trees and understorey shrubs and on the ground and their diet consists mainly of grass seeds and herbaceous plants.	Marginal.  Possible foraging habitat but no breeding habitat.	Unlikely – occasional visitor only	Low No
Pilotbird <i>Pycnoptilus floccosus</i> V EPBC	Pilotbirds are endemic to south-east Australia. Upland Pilotbirds occur above 600 m in the Brindabella Ranges in the Australian Capital Territory, and in the Snowy Mountains in New South Wales and north-east Victoria. Lowland Pilotbirds occur in forests from the	Absent	None	No No

Species and Status	Description of habitat <sup>10</sup>	Presence of habitat	Likelihood of occurrence	Potential Impact? for AoS Required?
	Blue Mountains west of Newcastle, around the wetter forests of eastern Australia, to Dandenong near Melbourne.  Pilotbirds are strictly terrestrial, living on the ground in dense forests with heavy undergrowth. Breeding takes places between August and January and adults build a domed nest on or near the ground.			
<i>Stagonopleura guttata</i> Diamond Firetail V – EPBC Act	Diamond firetails occur on the south-east mainland of Australia from south-east Queensland to Eyre Peninsula, South Australia, and about 300 km inland from the sea. Diamond firetails occur in eucalypt, acacia or casuarina woodlands, open forests and other lightly timbered habitats, including farmland and grassland with scattered trees. They prefer areas with relatively low tree density, few large logs, and little litter cover but high grass cover. Nests are bottle-shaped and are made of green grass blades and stems lined with fine grasses.	Marginal. Possible foraging habitat. No breeding habitat (nests) present/seen at site.	Unlikely.	Low No
<b>Mammals</b>				
Large-eared Pied Bat, Large Pied Bat <i>Chalinolobus dwyeri</i> V EPBC	Roosting habitat typically consists of sandstone cliffs and fertile woodland valley habitat within close proximity of each other.	Absent.	None. No records in area	No No
Spotted-tailed Quoll <i>Dasyurus maculatus</i> E EPBC	This species is found in a variety of habitat types including rainforest, open forest, woodland, coastal heath and inland riparian forest from the subalpine zone to the coastline. Species requires hollow bearing trees, fallen logs, small caves, rock crevices, boulder fields and rocky-cliff faces as den sites.	Absent. Site is too heavily modified with lack of cover	None.	No No
Greater Glider <i>Petauroides Volans</i> E – EPBC Act	The greater glider is the largest gliding possum in Australia, and is largely restricted to eucalypt forests and woodlands in eastern Australia. It is typically found in highest abundance in taller, montane, moist eucalypt forests with relatively old trees and abundant hollows. The species has relatively low persistence in small	Absent. No denning habitat	None	No No

Species and Status	Description of habitat <sup>10</sup>	Presence of habitat	Likelihood of occurrence	Potential for Impact? AoS Required?
E – BC Act	forest fragments, and disperses poorly across vegetation that is not native forest. Modelling suggests that they require native forest patches of at least 160 km <sup>2</sup> to maintain viable populations.			
Yellow-bellied Glider (south-eastern) <i>Petaurus australis australis</i> V - EPBC	The yellow-bellied glider (south-eastern) occurs in eucalypt-dominated woodlands and forests, including both wet and dry sclerophyll forests. Abundance is highly dependent on habitat suitability, which is in turn determined by forest age and floristics and shows a preference for large patches of mature old growth forest that provide suitable trees for foraging and shelter. The species uses hollow-bearing trees for breeding and shows a preference for smooth-barked eucalypts. The species feeds mainly on sap which it extracts by chewing off sections of bark from trees, with usually only a few trees selected for repeat feeding, and often leaving a number distinctive incision marks/scars on the trunks of feed trees.	Absent – no denning habitat	none	No No
Koala <i>Phascolarctos cinereus</i> E EPBC	This species inhabits eucalypt woodlands and forests over a broad but fragmented distribution throughout eastern Australia from north-east Queensland to the Eyre Peninsula in South Australia. In NSW it mainly occurs on the central and north coasts; they are also known from several sites on the southern tablelands.	Absent.	None – no nearby records and limited feed trees	No No
Grey-headed Flying-fox <i>Pteropus poliocephalus</i> V EPBC	Grey-headed Flying-foxes are generally found within 200 km of the eastern coast of Australia, from Bundaberg in Queensland to Melbourne in Victoria. Occur in rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops. Roosting camps are generally located within 20 km of a regular food source, commonly found in gullies, close to water, or in vegetation with a dense canopy. The closest is likely to be the large colony at Batemans Bay. Forage on the nectar and pollen of native trees, in particular <i>Eucalyptus</i> , <i>Melaleuca</i> and <i>Banksia</i> , and fruits of rainforest trees and vines. Travel up to 50 km to forage.	Marginal – lack of suitable feed trees and no camp trees present in area	Unlikely – potential occasional visitor	No No

Species and Status	Description of habitat <sup>10</sup>	Presence of habitat	Likelihood of occurrence	Potential Impact? for AoS Required?
<b>Reptiles</b>				
Pink-tailed Worm-lizard <i>Aprasia parapulchella</i> V EPBC	<p>The Pink-tailed Legless Lizard is only known from the Central and Southern Tablelands, and the South West Slopes. There is a concentration of populations in the Canberra/Queanbeyan Region. The species inhabits sloping, open woodland areas with predominantly native grassy groundlayers, particularly those dominated by Kangaroo Grass (<i>Themeda australis</i>). Sites are typically well-drained, with rocky outcrops or scattered, partially-buried rocks.</p> <p>Commonly found beneath small, partially-embedded rocks and appear to spend considerable time in burrows below these rocks; the burrows have been constructed by and are often still inhabited by small black ants and termites.</p>	Absent. No suitable rocky outcrops are present within the site.	None. No nearby records	No No
Striped Legless Lizard <i>Delma impar</i> V EPBC	<p>The Striped Legless Lizard occurs in the Southern Tablelands, the South West Slopes and possibly the Riverina. Populations are known in the Goulburn, Yass, Queanbeyan, Cooma and Tumut areas. Also in the ACT, Victoria and south-eastern South Australia. Found mainly in Natural Temperate Grassland but has also been captured in grasslands that have a high exotic component and in secondary grassland near Natural Temperate Grassland and occasionally in open Box-Gum Woodland. Habitat is where grassland is dominated by perennial, tussock-forming grasses such as Kangaroo Grass <i>Themeda australis</i>, <i>Austrostipa</i> spp., <i>Poa</i> spp., and occasionally wallaby grasses <i>Rytidosperma</i> spp. Goes below ground or under rocks or logs over winter.</p>	<p>Marginal within SDA area - lack of suitable tussock structure in grassland areas.</p> <p>Species confirmed present in nearby areas, outside of SDA area.</p>	Possible in adjacent areas but low probability within the SDA area	Low No
Grassland Earless Dragon <i>Tympanocryptis pinguicolla</i> E EPBC	<p>The grassland earless dragon is a native grassland specialist inhabiting natural temperate grasslands (as described above in Appendix A), where it occupies burrows of the wolf spider (<i>Lycosa</i> spp.) and wood cricket (<i>Cooraboorama canberrae</i>), embedded surface rocks and tussocks.</p>	Marginal – nearby areas contain areas of potentially suitable habitat, but SDA area likely too degraded for the species.	Unlikely - The species has been recorded several times in the locality, but was not recorded during	Low No

Species and Status	Description of habitat <sup>10</sup>	Presence of habitat	Likelihood of occurrence	Potential for Impact? AoS Required?
			targeted surveys by Capital Ecology (2023)  Subject land degraded to point where it is unlikely to support the species.	
<b>Amphibians</b>				
Green and Golden Bell Frog <i>Litoria aurea</i> V - EPBC	<p>The Green and Golden Bell Frog occurs mainly along coastal lowland areas of eastern NSW and Victoria. The furthest inland record of the species is at a recently discovered population near Hoskinstown in the Southern Tablelands (referred to as the Molonglo population) (Osborne et al. 2008). The species was previously known from elsewhere in the Southern Tablelands, but is now considered to have disappeared from the ACT and central slopes around Bathurst.</p> <p>Green and Golden Bell Frogs have been found in differing habitat in NSW and Victoria. In NSW, the species commonly occupies disturbed habitats, and breeds largely in ephemeral ponds, but also need various other habitats for different aspects of their life cycle including foraging, breeding, over-wintering and dispersal.</p>	Absent. Lack of suitable aquatic habitats	Very unlikely. Not recorded at site during surveys	No No
Booroolong Frog <i>Litoria booroolongensis</i> E EPBC	<p>The Booroolong Frog is restricted to tablelands and slopes in NSW and north-east Victoria at 200–1300 m above sea level. The species is predominantly found along the western-flowing streams and their headwaters of the Great Dividing Range, and a small number of eastern-flowing streams in the north end of its range</p> <p>The Booroolong Frog occurs along permanent streams with some fringing vegetation cover such as ferns, sedges or grasses. Adults occur on or near cobble banks and other rock structures within</p>	Absent. No rocky stream habitat	None	No No

Species and Status	Description of habitat <sup>10</sup>	Presence of habitat	Likelihood of occurrence	Potential Impact? for AoS Required?
	stream margins, or near slow-flowing connected or isolated pools that contain suitable rock habitats.			
Yellow-spotted Tree Frog <i>Litoria castanea</i> E EPBC	Requires large permanent ponds or slow flowing 'chain-of-ponds' streams with abundant emergent vegetation such as bulrushes and aquatic vegetation.  Adults are active during spring and summer and bask on sunny days, and moves and forages at night on grassy banks.	Absent. Lack of suitable aquatic habitats	None	No No
Growling Grass Frog <i>Litoria raniformis</i> V EPBC	This species is found mostly amongst emergent vegetation, including <i>Typha sp.</i> (bullrush), <i>Phragmites sp.</i> (reeds) and <i>Eleocharis sp.</i> (sedges), in or at the edges of still or slow-flowing water bodies such as lagoons, swamps, lakes, ponds and farm dams.	Absent. Lack of suitable aquatic habitats	Very unlikely. Not recorded at site during surveys	No No
<b>Insects</b>				
Key's Matchstick Grasshopper <i>Keyacris scurra</i> E EPBC	Key's Matchstick Grasshopper is a slender, wingless grasshopper. The species is endemic to NSW, the ACT and Victoria (although possibly now extinct in Victoria). This species is typically recorded in native grasslands in the following land-uses: cemeteries, along railway easements, travelling stock routes and more recently conservation reserves in the ACT. It 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). Although it does not feed on <i>Themeda</i> , it may be important for providing protection from predators. Disturbance appears to be an important determinant of site occupancy and it appears to be absent from sites where inappropriate disturbance occurs (such as overgrazing at inappropriate times of year which can interrupt the life cycle of the species).	Marginal – Lack of suitable vegetation composition in grasslands – site likely to be degraded	Unlikely – no nearby records	No No

Species and Status	Description of habitat <sup>10</sup>	Presence of habitat	Likelihood of occurrence	Potential for Impact? AoS Required?
Golden Sun Moth <i>Synemon plana</i> CE EPBC	The golden sun moth has been recorded in native grasslands and grassy woodlands containing wallaby grass ( <i>Austrodanthonia</i> spp.), speargrass ( <i>Austrostipa</i> spp.), and <i>Bothriochloa</i> , as well as in degraded grasslands dominated by the exotic Chilean needlegrass ( <i>Nassella nessiana</i> ), a weed of national significance.	Marginal within SDA area - lack of suitable tussock structure in grassland areas.  Species confirmed present in nearby areas, outside of SDA area.	Possible in adjacent areas but low probability within the SDA area	Low No
<p>CE EPBC = listed as Critically Endangered under the Commonwealth <i>Environment Protection &amp; Biodiversity Conservation Act 1999</i>.</p> <p>E EPBC = listed as Endangered under the Commonwealth <i>Environment Protection &amp; Biodiversity Conservation Act 1999</i>.</p> <p>V EPBC = listed as Vulnerable under the Commonwealth <i>Environment Protection &amp; Biodiversity Conservation Act 1999</i>.</p>		<p>M EPBC = listed as Migratory under the Commonwealth <i>Environment Protection &amp; Biodiversity Conservation Act 1999</i>.</p> <p>CAMBA = Chinese-Australia Migratory Bird Agreement</p> <p>JAMBA = Japan-Australia Migratory Bird Agreement</p>		

## APPENDIX B: Flora records.

Relative abundance is given by a cover abundance scale/score (modified Braun-Blanquet, and as per the C/A score used in Rehwinkle, 2015) for a given patch (approx. 0.1ha or generally 50 m x 20m) as follows:

1. < 5% cover and solitary (<4 individuals)
2. < 5% cover and few (4–15 individuals)
3. < 5% cover and numerous/scattered (>15 individuals)
4. 5% – <25% cover
5. 25% – <50% cover
6. 50% – <75% cover
7. 75% cover and greater.

For this assessment, the relative abundance estimate was made over the entire study area of the Master Plan.

GF = Growth Form; codes are as follows: T = tree; S = shrub; G = grass; H/F/S = herb/forb/sedge (but includes also bryophytes/mosses and other graminoids); VC = vine/climber (and includes epiphytic parasites)

Species	Common name	Growth Form	AREA A	AREA B	AREA C	TREED AREA
<b>Exotic Species</b>						
<i>Acer sp.</i>	(Box) Elder	T				<b>2</b>
<i>Acetosella vulgaris</i>	Sorrel	H/F/S			2	2
<i>Avena sp.</i>	Oats	G	3	3	3	3
<i>Bromus (catharticus?)</i>	Brome	G		3	3	
<i>Carthamus lanatus</i>	Saffron Thistle	H/F/S	3		3	
<i>Celtis australis</i>	Nettle Tree	T				2
<i>Conyza bonariensis</i>	Fleabane	H/F/S	3	3	3	
<i>Crataegus monogyna</i>	Hawthorn	S				3
<i>Cupressus sp.</i>	Cypress Pine	T				3
<i>Cynodon dactylon</i>	Couch	G			3	3
<i>Cynosurus cristatus</i>	Crested Dogstail Grass	G		3	3	
<i>Echium plantagineum</i>	Paterson's Curse	H/F/S	3		3	
<i>Eragrostis curvula</i>	African Lovegrass	G	5	5	5	3
<i>Fraxinus sp.</i>	Ash Tree	T				3
<i>Gamochaeta pupurea</i>	Purple Cudweed	H/F/S	2			
<i>Gleditsia triacanthos</i>	Honey Locust	T				2
<i>Hirschfeldia incana</i>	Buchan Weed	H/F/S	3	3	3	
<i>Holcus lanatus</i>	Yorkshire Fog	G				3
<i>Hypericum perforatum</i>	St John's Wort	H/F/S		2	3	
<i>Hypochaeris sp.</i>	Flatweed	H/F/S	3	3	4	3
<i>Lepidium sp. (africanus?)</i>	a (Common) Peppergrass	H/F/S		2		
<i>Lysimachia arvensis</i>	Scarlet Pimpernel	H/F/S				2
<i>Malva (neglecta?)</i>	Dwarf Mallow	H/F/S			3	2
<i>Marrubium vulgare</i>	Horehound	H/F/S	2			2
<i>Modiola caroliniana</i>	Red-flowered Mallow	H/F/S	3			2
<i>Nassella neesiana</i>	Chilean Needlegrass	G		3		

Species	Common name	Growth Form	AREA A	AREA B	AREA C	TREED AREA
<i>Nassella trichotoma</i>	Serrated Tussock	G			3	
<i>Onopordum acanthium</i>	Scotch Thistle	H/F/S	4			
<i>Onopordum (acaulon?)</i>	Stemless Thistle	H/F/S			3	
<i>Panicum capillare</i>	Witchgrass	G			3	
<i>Cucumis myriocarpus</i>	Paddy Melon	H/F/S		2	2	
<i>Paronychia brasiliiana</i>	Chilean Whitflow Wort	H/F/S		3		2
<i>Paspalum dilatatum</i>	Paspalum	G	4	3	4	3
<i>Phalaris aquatica</i>	Phalaris	G	3		3	
<i>Photinia sp.</i>	Photinia	S				3
<i>Pinus sp.</i>	Pine Tree	T				5
<i>Plantago lanceolata</i>	Ribwort Plantain	H/F/S	3		3	3
<i>Populus sp.</i>	Poplar	T				2
<i>Prunus sp.</i>	Ornamental Plum	T				3
<i>Quercus sp.</i>	Oak Tree	T				3
<i>Rubus sp.</i>	Blackberry	S	2		3	
<i>Sanguisorba minor</i>	Sheep's Burnet	H/F/S		2		
<i>Solanum nigrum</i>	Blackberry Nightshade	H/F/S		2		
<i>Sonchus asper</i>	Prickly Sowthistle	H/F/S	3			
<i>Taraxacum officinale</i>	Dandelion	H/F/S	3			3
<i>Tragopogon dubius</i>	Goatsbeard	H/F/S			3	
<i>Trifolium repens</i>	White Clover	H/F/S			3	
<i>Trifolium subterraneum</i>	Subterraneum Clover	H/F/S	5	3	4	
<i>Trifolium sp.</i>	a Clover	H/F/S		3		
<i>Ulmus sp.</i>	Elm Tree	T				3
<i>Urtica urens</i>	Small Nettle	H/F/S	2			
<i>Verbascum thapsus</i>	Great Mullein	H/F/S			3	
<i>Vulpia myuros</i>	Rat's Tail Fescue	G			3	
<i>Xanthium spinosum</i>	Bathurst Burr	H/F/S			1	
<b>Estimated Percentage Cover (groundcover only)</b>			<b>90</b>	<b>80</b>	<b>85</b>	<b>70</b>
<b>Total Exotic Species</b>			<b>54</b>	<b>19</b>	<b>17</b>	<b>26</b>
<b>Native Species</b>						
<i>Acacia baileyana</i>	Cootamundra Wattle	S				2
<i>Austrostipa bigeniculata</i>	Tall Speargrass	G		4	3	3
<i>Austrostipa scabra</i>	Speargrass	G		3		
<i>Bothriochloa macra</i>	Redgrass	G	4	3	3	3
<i>Brachychiton populneus</i>	Kurrajong	T				2
<i>Callistemon sp.</i>	Bottlebrush	S				1
<i>Eucalyptus blakelyi</i>	Blakely's Red Gum	T				1
<i>Eucalyptus mannifera</i>	Brittle Gum	T				3
<i>Eucalyptus melliodora</i>	Yellow Box	T				3
<i>Eucalyptus polyanthemos</i>	Red Box	T				3
<i>Eucalyptus sideroxylon</i>	Red Ironbark	T				1
<i>Eucalyptus viminalis</i>	Ribbon Gum	T				2
<i>Euchiton sphaericus</i>	Common Cudweed	H/F/S	2		2	

Species	Common name	Growth Form	AREA A	AREA B	AREA C	TREED AREA
<i>Geranium solanderi</i>	Native Geranium	H/F/S			2	
<i>Juncus sp. (filicaulis?)</i>	a Pinrush	H/F/S	2	2	3	
<i>Lomandra filiformis</i>	Wattle Mat-rush	H/F/S		2		
<i>Melaleuca sp.</i>	Tea-tree	S-T				1
<i>Microlaena stipoides</i>	Microlaena	G		3		3
<i>Oxalis perennanse</i>	Grassland Wood Sorrel	G	2	3	2	
<i>Poa sp.</i>	Poa Tussock	G		3	3	
<i>Rumex brownii</i>	Swamp Dock	H/F/S			2	
<i>Rytidosperma sp. (carphoides?)</i>	a Wallaby Grass	G	2	3		
<i>Sporobolus creber</i>	Rat's Tail Grass	G	3			
<i>Vittadinia cuneata</i>	Fuzzy New Holland Daisy	H/F/S		2	2	
<i>Wahlenbergia communis</i>	Tufted Bluebell	H/F/S		3		2
<b>Estimated Percentage Cover (groundcover only)</b>			<b>10</b>	<b>20</b>	<b>15</b>	<b>10</b>
<b>Total Native Species</b>		<b>25</b>	<b>6</b>	<b>11</b>	<b>9</b>	<b>14</b>

## APPENDIX C. ACT Ecological Network Dashboard Maps

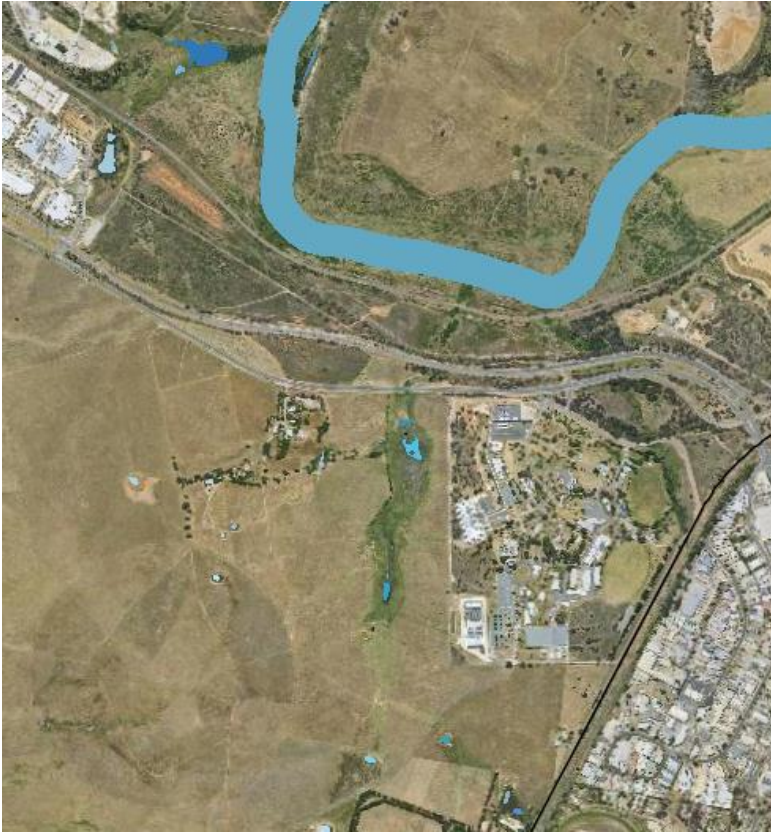


Figure C1. Small native fish – connected habitat

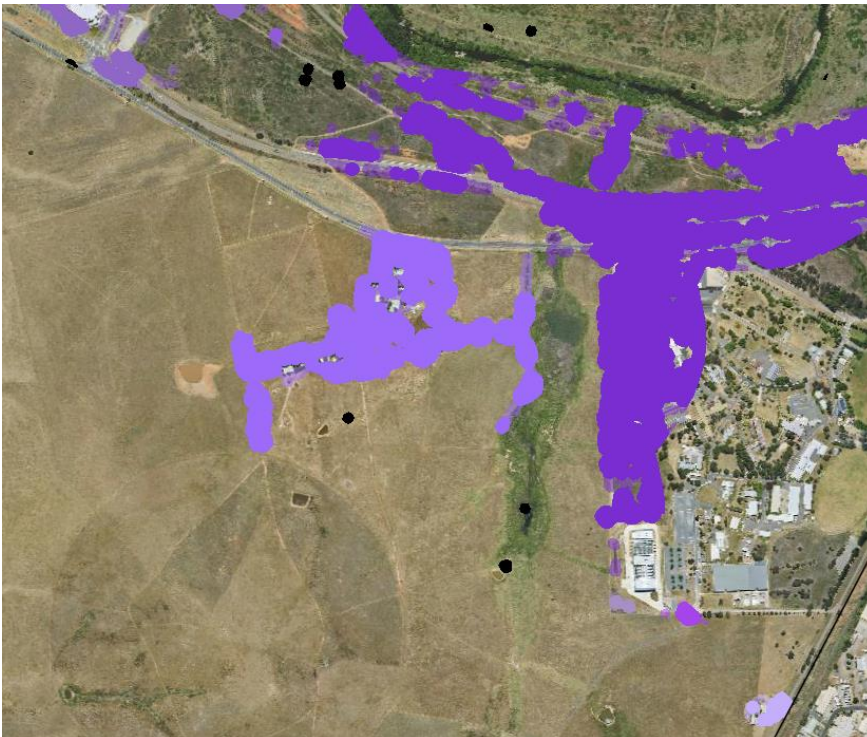


Figure C2. Amphibians – connected habitat (purple) and remnant patches (black)



Figure C3. Riparian Reptiles and Mammals – riparian connected habitat (green) and riparian remnant patches (black)



Figure C4. Small to Medium Terrestrial Mammals – connected habitat (pink) and remnant patches (black)

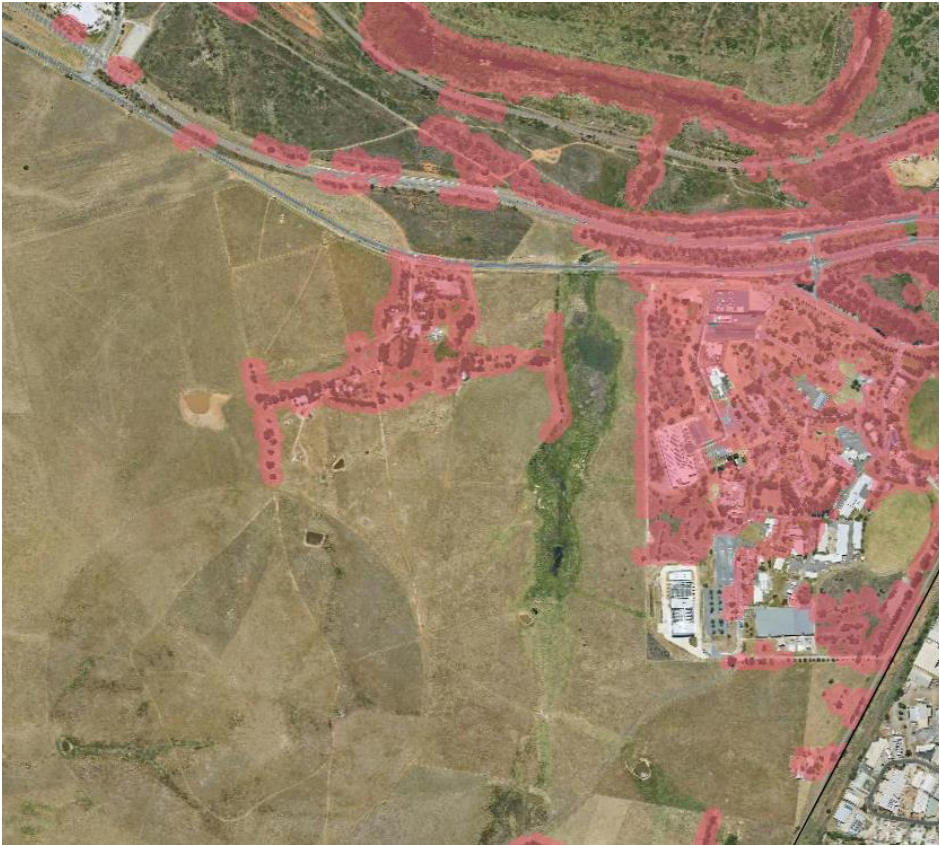


Figure C5. Small Woodland Birds – connected habitat



Figure C6. Grassland Reptiles – connected habitat (brown) and remnant patches (black)

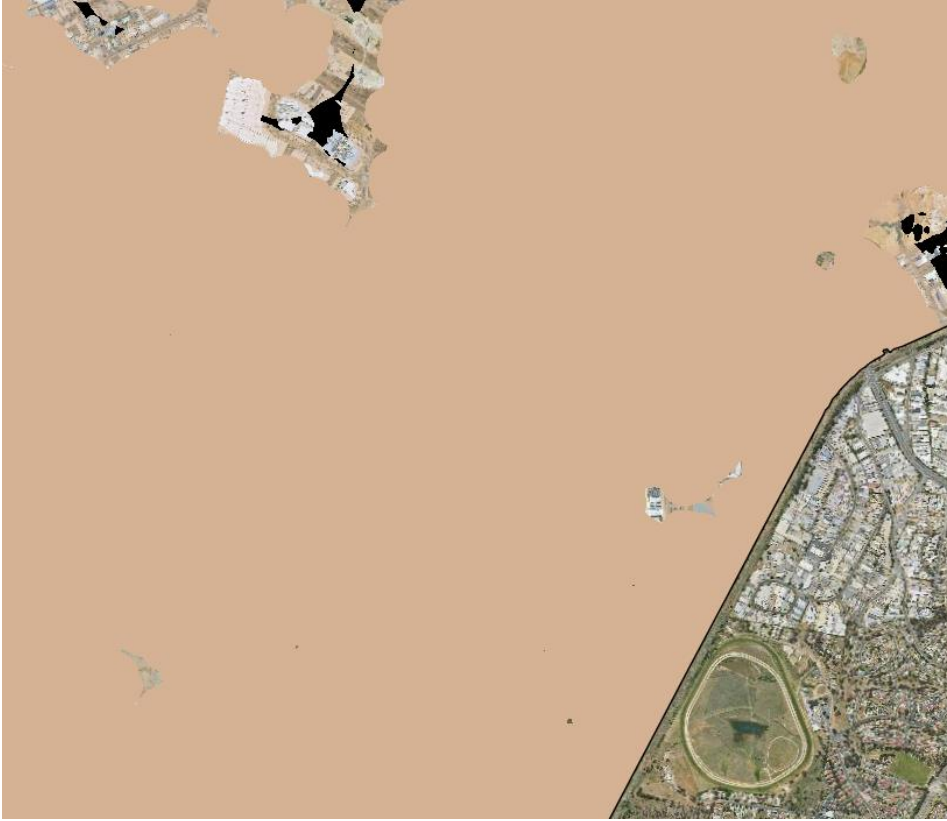


Figure C7. Native Bees – connected habitat (brown) and remnant patches (black)

## APPENDIX D. Summary of Native Trees at the Site

Note: Trunk Size classes are as follows (based on tree size classes and replacement ratios under Table 2 of the BSUD):

- S: Shrubs <5cm dbh
- A: Trees <5cm dbh
- B: Trees 5-20cm dbh
- C: Trees 21 – 30cm dbh
- D: Trees 31-40cm dbh

(no native trees above 40cm dbh were recorded at the site)

Tree No (tally)	Survey Plan No.	Tree Name/Species	Trunk Size Class	Hollows	Nests	Note
1	284	Eucalyptus polyanthemos - Red Box	B	0	0	To be removed
2	282	Eucalyptus melliodora -Yellow Box	B	0	0	To be removed
3	281	Eucalyptus blakelyi - Red Gum	B	0	0	To be removed
4	279	Eucalyptus mannifera - Red Spotted Gum	C	0	0	To be removed
5	276	Eucalyptus mannifera - Red Spotted Gum	B	0	0	To be removed
6	275	Eucalyptus polyanthemos - Red Box	C	0	0	To be removed
7	273	Eucalyptus melliodora -Yellow Box	C	0	0	To be removed
8	267	Eucalyptus mannifera - Red Spotted Gum	C	0	0	To be removed
9	264	Eucalyptus melliodora -Yellow Box	B	0	0	To be removed
10	262	Eucalyptus melliodora -Yellow Box	B	0	0	To be removed
11	260	Eucalyptus mannifera - Red Spotted Gum	B	0	0	To be removed
12	258	Eucalyptus mannifera - Red Spotted Gum	A	n/a	n/a	Tree not located on site
13	257	Eucalyptus polyanthemos - Red Box	C	0	0	To be removed
14	256	Eucalyptus polyanthemos - Red Box	B	0	0	To be removed
15	255	Eucalyptus polyanthemos - Red Box	B	0	0	To be removed
16	250	Eucalyptus polyanthemos - Red Box	D	0	0	To be removed
17	252	Eucalyptus polyanthemos - Red Box	C	0	0	To be removed

18	248	Eucalyptus melliodora -Yellow Box	A	n/a	n/a	Tree not located on site
19	247	Eucalyptus melliodora -Yellow Box	A	n/a	n/a	Tree not located on site
20	246	Eucalyptus mannifera - Red Spotted Gum	B	0	0	To be removed
21	244	Eucalyptus polyanthemos - Red Box	C	0	0	To be removed
22	243	Eucalyptus polyanthemos - Red Box	C	0	0	To be removed
23	242	Eucalyptus polyanthemos - Red Box	B	0	0	To be removed
24	241	Eucalyptus polyanthemos - Red Box	B	0	0	To be removed
25	237	Eucalyptus melliodora -Yellow Box	C	0	0	To be removed
26	235	Eucalyptus sp. - Gum Tree - E. melliodora	C	0	0	To be removed
27	234	Eucalyptus polyanthemos - Red Box	C	0	0	To be removed
28	228	Eucalyptus polyanthemos - Red Box	C	0	0	To be removed
29	227	Eucalyptus melliodora -Yellow Box	C	0	0	To be removed
30	226	Eucalyptus cinerea - Argyle Apple	B	0	0	To be removed
31	225	Eucalyptus melliodora -Yellow Box	B	0	0	To be removed
32	224	Eucalyptus melliodora -Yellow Box	B	0	0	To be removed
33	223	Eucalyptus blakelyi - Red Gum	C	0	0	To be removed
34	221	Eucalyptus melliodora -Yellow Box	C	0	0	To be removed
35	220	Eucalyptus sp. - Gum Tree	B	0	0	To be removed
36	214	Callistemon sp.- Bottlebrush	S	0	0	Shrub
37	212	Eucalyptus sideroxylon - Red Ironbark	C	0	0	To be removed
38	211	Brachychiton populneus	B	0	0	To be removed
39	209	Eucalyptus sp. - Gum Tree	A	n/a	n/a	Tree not located on site
40	206	Eucalyptus mannifera - Red Spotted Gum	C	0	0	To be removed
41	205	Eucalyptus mannifera - Red Spotted Gum	C	0	0	To be removed
42	204	Melaleuca bracteata - Black tea tree	S	0	0	Shrub
43	201	Eucalyptus sideroxylon - Red Ironbark	C	0	0	To be removed
44	190	Brachychiton populneus	B	0	0	To be removed
45	184	Eucalyptus sp. - Gum Tree	n/a	0	0	Dead Tree
46	179	Brachychiton populneus	C	0	0	To be removed
47	146	Brachychiton populneus	B	0	0	To be removed

48	148	Brachychiton populneus	B	0	0	To be removed
49	138	Eucalyptus sp. - Gum Tree (E. viminalis)	C	0	0	To be removed
50	126	Brachychiton populneus	B	0	0	To be removed
51	125	Brachychiton populneus	B	0	0	To be removed
52	122	Eucalyptus sp. - Gum Tree	B	0	0	To be removed
53	120	Eucalyptus melliodora -Yellow Box	B	0	0	To be removed
54	100	Eucalyptus melliodora -Yellow Box	C	0	0	To be removed
55	97	Eucalyptus melliodora -Yellow Box	B	0	0	To be removed
56	95	Eucalyptus sp. - Gum Tree - E. melliodora	C	0	0	To be removed
57	94	Eucalyptus sp. - Gum Tree - E. melliodora	B	0	0	To be removed
58	93	Eucalyptus sp. - Gum Tree - E. melliodora	B	0	0	To be removed

## APPENDIX E. Site Photos



**Photo 1.** View west across northwestern margins of the subject site.



**Photo 2.** View southwest across central and margins of the subject site.



**Photo 3.** View west across western margins of the subject site.



**Photo 4.** View west across western margins of the subject site.



**Photo 5.** View south across western margins of the subject site.



**Photo 6.** View north across western boundary of Homestead area with planted exotic Pine trees and farm buildings/infrastructure.



**Photo 7.** View southeast across central parts of the modified Homestead area and access tracks.



**Photo 8.** View east across central parts of the modified Homestead area, with a planted native tree (Ribbon Gum) in front of existing buildings



**Photo 9.** View east across northern parts of the property between the Homestead and Canberra Avenue with planted native trees



**Photo 10.** View southwest across northern parts of the property between the Homestead and Canberra Avenue with planted native and exotic trees



**Photo 11.** View south across eastern parts of the property (Section D) where zone substation will be located in background. Note, foreground grassland mapped by Capital Ecology (2023) as *ACT01 – Zone 1.3 Native Dom – Low Diversity grassland*. This area currently appears to be in poor condition, being heavily grazed and now more exotic dominant groundcover.