Biodiversity Assessment Report

Watson Health Hub
(northern part) Block 1, Section 84,
Watson, ACT

For:

Judd Studio

12 June 2023

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1 INTRODUCTION AND PROJECT BACKGROUND

1.1 Project background

PATH Co have been commissioned by Judd Studio Architects to undertake an ecological assessment to support the proposed redevelopment of the site of the current Ted Noffs Foundation at Block 1, Section 84, Watson (also identified as 350 Antill Street; Figure 1). The proposed new development will be called the Winnunga Alcohol and Other Drug Rehabilitation Facility.

The subject site is understood to be owned by the ACT Government Health Directorate (ACTHD) and is currently jointly tenanted by the Ted Noffs Foundation (TNF) and Catholic Care. The TNF provides residential care for teenagers with drug and alcohol issues, and Catholic Care provides residential care for teenagers with mental health issues.

ACTHD is seeking to undertake a total redevelopment of the site to provide modern, fit-for-purpose facilities for the TNF and Catholic Care organisations, as well as opportunities for future expansion space. In addition, it is understood that ACTHD is also planning for the construction and operation of a residential drug and alcohol rehabilitation facility for Aboriginal and Torres Strait Islander adults.

It is understood that in 2020, ACTHD commissioned a high-level masterplan of the Watson site which included confirmation that the Watson site was suitable, and large enough, for the construction of the three new facilities being the rehabilitation facility, a new building for the TNF, and a new building for Catholic Care.

To support the proposed redevelopment and intended future uses for the organisations as established by the masterplan, the site will need to be subdivided, with a portion of the site (being roughly the northern third, circa 2000 sqm GFA with accompanying outdoor recreational areas) to be then granted as a Crown lease to a non-government organisation. This organisation would then design, build and operate the rehabilitation facility. The southern (two-thirds) portion of the block will be retained by ACTHD as the location for the new facilities for the TNF and Catholic Care, including residual land for the development of new facilities in the future.

This assessment focusses on the proposed development of the northern portion of the site for the new health facilities, however where relevant, consideration of the biodiversity values of the southern portion of the site is also provided. The southern third of the site (i.e., beneath the hatched overlay on Figure 2), is subject to a separate redevelopment proposal.

The aims of this assessment are to assess the site's existing biodiversity values, by both desk-top and site-based survey methods and consider the potential impacts of the proposed redevelopment on these 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 will then inform whether the project may have the potential to trigger the requirement for an Environmental Impact Statement (EIS) to be

prepared in accordance with Schedule 4, Part 4.3 of the *ACT Planning and Development Act 2007*, 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).

1.2 Site Context

The subject site is identified as Block 1, Section 84, Watson and also known as 350 Antill Street (Figure 1).

The site occupies a total area of 33,177m^2 (or about 3.3 ha) and is located on the eastern side of Antill Street, on the north-eastern outskirts of Watson. The site is bordered to the north, east and south by vacant undeveloped land, including the Mount Majura Nature Reserve occupying most of the land to the direct east of the site.

The subject site is currently zoned CZ6: Leisure and Accommodation under the ACT Territory Plan, and there are no applicable overlay zones.

The site is generally flat and currently supports a number of articulated buildings and carparking area located within the central portion of the site. The buildings are currently used by the Ted Noffs Foundation (TNF). The outer boundaries of the site, including about one-third of the entire western margins of the site support existing intact woodland and tree plantings.

1.3 Proposed Development

Based on the site design plans, the proposed development is understood to involve the decommissioning (demolition) of the existing buildings and the construction of the following new facilities:

- Residential rooms (bedrooms) will three layout options
- Group lounge
- Flexible group kitchen
- Dining room area
- Multipurpose room
- Gymnasium
- Mens shed
- Courtyards and active areas including half-sized basketball court and playground
- New/revised access arrangements from Antill Street
- Visitor Car Parking

The proposed development plan is located mainly in the eastern margins of the site and seeks to retain as much of the native woodland across the western margins of the site as possible. Some removal of existing (approximately four) trees will be required to facilitate the new development.

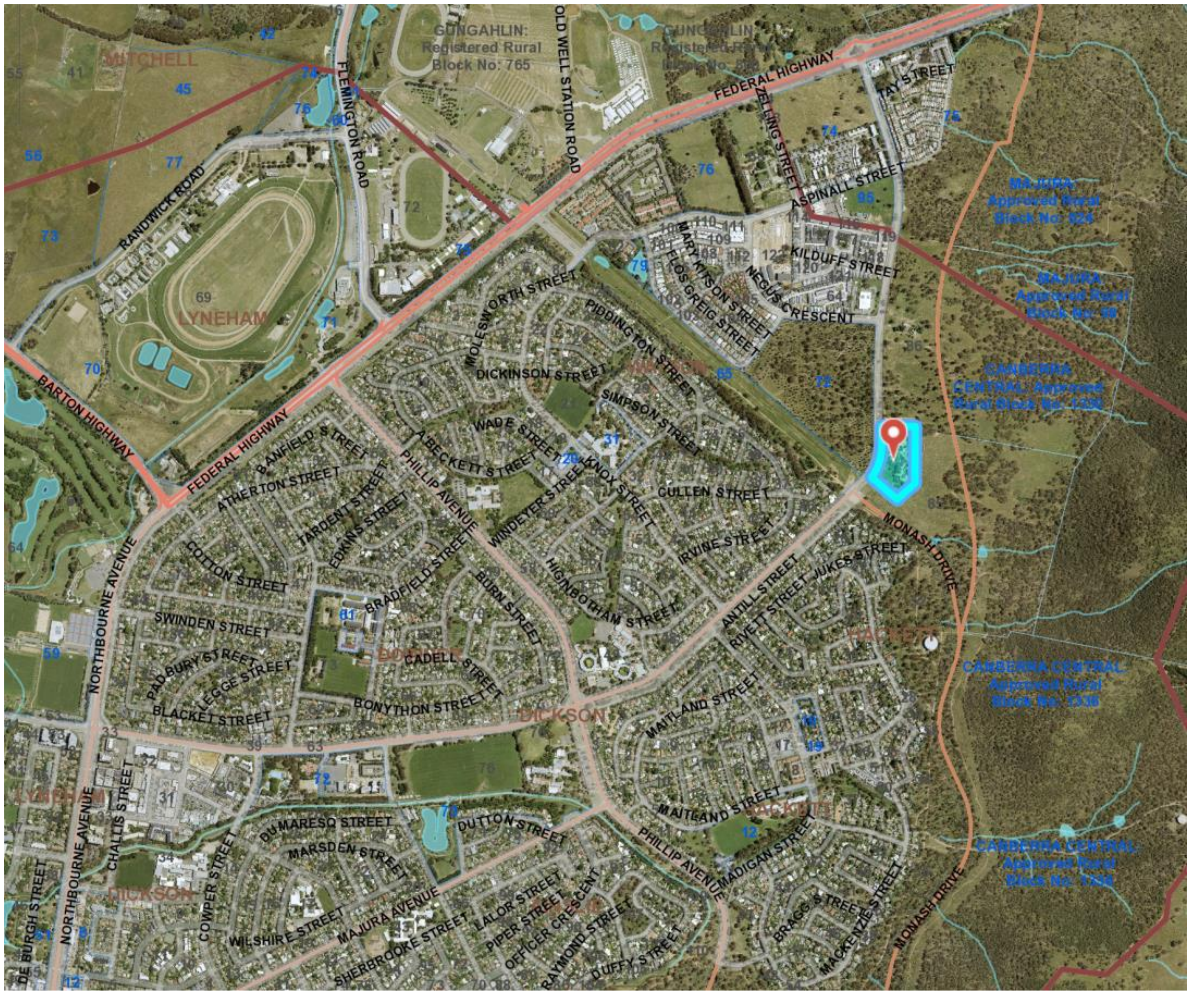

Figure 1. Study site location

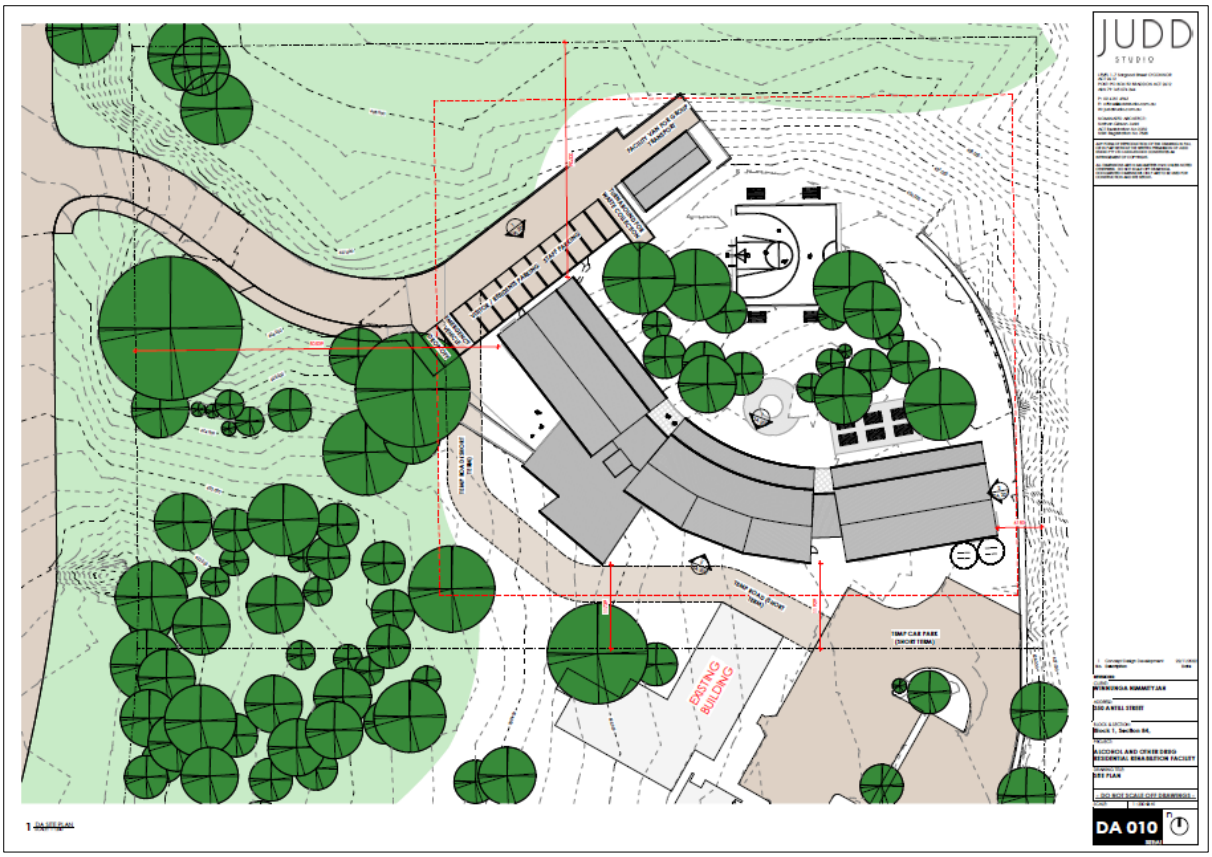

Figure 2. Proposed development

(note: this assessment considers only the development of the northern (one-third) of Block 1 Section 84; biodiversity values of the southern portion are discussed where relevant to the findings of this assessment)

2 ASSESSMENT APPROACH

The assessment of the site's biodiversity values included a combination of both desktop searches as well as a brief site inspection, as described further below.

2.1 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 *Significant Species, Vegetation Communities and Registered Trees* database maps (http://app.actmapi.act.gov.au/actmapi/), and
- Canberra Nature Map (https://canberra.naturemapr.org)
- Atlas of Living Australia (ALA) (https://www.ala.org.au/)
- EPBC protected Matters Search Tool (http://www.environment.gov.au/webgis-framework/apps/pmst/pmst.jsf) applying a 10 km search area centred at the mid-point of the project area).
- Commonwealth Threatened Species Profiles (http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl)

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

2.2 Site Survey

A brief daytime assessment of the subject site was undertaken on 11/09/2022. The survey approach for this preliminary assessment involved a random meander about the entire site (excluding buildings) to broadly assess the flora and fauna values, including potential presence of or suitability of the site for supporting listed threatened species, as follows:

Flora

The flora survey for this assessment involved compiling a detailed (but not exhaustive) list of the flora species present at the site, including noting general abundance/cover levels as well as observed distribution of each species at the site. However, every individual tree present on the site was inspected and the species recorded as well as other potential habitat features (see below).

This approach enabled a determination of the broad vegetation communities/types present at the site including their condition and status (for example, as a listed threatened ecological community), including any observations of listed threatened flora species or their habitats within the general vicinity of the site. Observations of listed threatened flora species or their potential occurrence based on the habitat conditions present at the site were also made.

Fauna

Given the nature of the brief daytime survey for this preliminary assessment, detailed or targeted surveys for fauna (such as direct visual survey techniques like dawn/dusk surveys, nocturnal spotlighting, trapping or deployment of remote recording devices like cameras or acoustic recorders) was not undertaken. Rather, this survey approach focussed on the identification of notable fauna habitat features present at the site, and, with a particular focus on potential habitat values for listed threatened fauna including but not limited to the presence of any hollow-bearing trees or known feed trees, fallen logs, rocky outcrops and the like.

2.3 Survey Adequacy or Limitations

The early-Spring timing of the surveys meant a number of late-flowering plant species may have been missed in the flora survey. Additionally, as the site appears to be subject to some regular management (i.e. mowing of groundcover), there was minimal reproductive material (i.e. flowers and seeds) to enable a high degree of confidence in the identification some of the species that may be presence at the site. Notwithstanding this, the assessment approach was considered adequate for the identification of the overall vegetation community status and potential habitat for threatened species (identified as having the potential to occur in the area based on the database searches).

The brief single-day survey approach described above also would not meet relevant applicable survey guidelines for a number of threatened fauna species that may have the potential to occur in the local/surrounding area. The main limitation on completing an accepted survey program is the seasonal timing requirements for undertaking surveys of most of the threatened species that may be of interest (i.e. Striped Legless Lizard, Golden Sun Moth and Perunga Grasshopper). Notwithstanding this limitation, the habitat-based assessment conducted provides some information on the potential occurrence of these species at the site and/or whether any additional targeted surveys may be required for any particular species.

This assessment also does not include the mapping or assessment of Protected Trees in accordance with the ACT *Tree Protection Act 2005*.

3 SITE VALUES

3.1 Vegetation

3.1.1 Flora

For ease of reference and description of values, the site subject to this was effectively separated into two distinct areas based on the observed vegetation values as shown in Figure 3 and described below. Note that the assessment of the vegetation values below is primarily in relation to the northern third of the block subject to the proposed development, however, comments are made where relevant on the overall vegetation values within the entire block.

- **Area A:** Predominantly native woodland community across the western 'half' of the (northern) subject area,
- **Area B:** Landscaped areas comprising a mix of planted native and non-native trees across the central and eastern portion of the (northern part of) site, located mainly about the existing buildings and carpark.

Area A: Native Woodland Community:

The vegetation within the western 'half' of the subject site in the northern third of the block was found to comprise a partly modified native vegetation community with a relatively dense tree canopy cover dominated mainly by Apple Box *Eucalyptus bridgesiana*) with some Brittle Gum (*E. mannifera*) tending to co-dominant in this area. Some Woollybutt (*E. longifolia;* likely planted specimens) were also recorded in this area.

Also found within the overall native woodland patch, but recorded only within the southern two-thirds portion (and therefore outside of the proposed development area, but directly contiguous with the vegetation described above), were a number of other native tree species. This southern area was observed to also support some, but fewer, Brittle Gum and Apple Box as well as some Woollybutt. Other native tree species in this southern area and not recorded in the northern subject area, were numerous Red Box (*E. polyanthemos*) tending to dominant in the central parts of this area, while Blakely's Red Gum (*E. blakelyi*) as well as some Yellow Box *E. melliodora*) were present and common in the southern margins of this area. A single River Peppermint (*E. elata*; also likely a planted specimen) was also recorded in this southern part of the woodland patch. In addition to these, two Red Ironbark (*E. sideroxylon*) and a River She-oak (*Casuarina cunninghamiana*) were also recorded within Block 1 Section 84 but were located in a small woodland patch on the eastern margins of the block not contiguous with the main woodland patch across the western half of the block, and not located within the northern area subject to the development proposal that this assessment supports.

Generally, the woodland within Area A of this assessment was devoid of a shrubby understorey vegetation layer, although a few Cootamundra Wattle (*Acacia baileyana*) were recorded in this area.

The groundcover vegetation in Area A on the whole was observed to be highly modified and dominated by non-native species. The main non-native species included a variety of grasses such as African Lovegrass (**Eragrostis curvula;* observed to be dominant in

places), a variety of Clover species (**Trifolium* spp.), Oats (**Avena* sp.), Brome (**Bromus* sp.), Perennial Ryegrass (Lolium perenne) and Winter Grass (**Poa annua*). A wide variety of non-native herbs and forbs were also recorded in the groundcover vegetation including Ribwort Plantain (**Plantago lanceolata*), Dandelion (**Taraxacum officionale*), Capeweed (**Arctotheca calendula*), Flatweed (**Hypochaeris radicata*), Buchan Weed (**Hischfeldia incana*), Paterson's Curse (**Echium plantagineum*), Onion Grass (**Romulea rosea*), Prickly Lettuce (**Lactuca serriola*), Stemless Thistle (**Onopordum acaulon*), Red-flowered Mallow (**Modiola caroliniana*) and some isolated patches of Serrated Tussock (*Nassella trichotoma*), mainly near the road corridor. Other non-native species were also recorded in this area but lower abundance (see Appendix B for a full list of flora species recorded in Area A).

A small number of native species were also recorded in Area A, including notably Corkscrew Grass (*Austrostipa scabra*), Tall Speargrass (*A. bigeniculata*), Redgrass (*Bothriochloa macra*), Couch (*Cynodon dactylon*[1]), Microlaena (*Microlaena stipoides*), Grassland Wood Sorrel (*Oxalis perennans*), a native Geranium (*Geranium* sp.), Cudweed (*Euchiton sphaericus*), Fuzzy New Holland Daisy (*Vittadinia cuneata*) and some Stonecrop (*Crassula siberiana*). On the whole however, native species richness was relatively low compared with the non-native species and importantly, the non-native species were observed to account for a much higher portion of the overall estimated cover (abundance) than the native species.

In summarising the species composition within Area A of the northern portion of the block subject to this assessment, there were a total of 48 plant species recorded including 18 native and 30 exotic species. Of the natives, five were tree or shrub species, with 13 native groundcover species recorded in this Area A. It is noted that an additional six native tree and shrub species were recorded in the woodland patch but were located in the southern portion of the site, outside of the area subject to the development proposal that this assessment supports. These are described in further detail by the report that has been prepared for that separate development (by PATH Co, 12 October 2022). All 30 non-native species recorded in Area A were groundcover species, with no exotic tree species recorded in this Area A.

A full list of the species recorded in this area as well as an estimate of the relative abundance/cover values is provided at Appendix B. The implications of this species composition with respect to the potential occurrence of any listed threatened ecological communities at the site is discussed further below as well as an assessment of the potential occurrence at the site of any listed threatened flora species.

Area B: Landscaped Areas & Plantings:

The vegetation in Area B is comprised mainly of planted trees, including mostly exotic tree and large shrub varieties, although some native trees are also located in this area. The native tree species present in Area B include mainly Brittle Gum located near to the existing driveway as well as a small number of Woollybutt within the existing carpark area. The remainder of the trees in this area are non-native ornamental varieties and include Claret Ash (**Fraxinus* 'Raywood'), Pin Oak (**Quercus palustris*), Honey Locust (**Gleditsia triacanthos*), English elm (**Ulmus procera* as well as other Elm varieties), Manchurian Pear

[1] Most occurrences of couch are now considered to be a naturalised cultivar

(**Pyrus ussuriensis*), Oriental Plane Tree (**Platanus orientalis*), Maple (**Acer* sp.) and Silver Birch (**Betula pendula*).

The groundcover vegetation in Area B was generally of similar composition to Area A in the managed grassland area, however around the carpark and garden bed areas closer to buildings, a number of other mostly non-native groundcovers and small shrubs were observed. This included mainly Agapanthus (**Agapanthus* spp.), Blue Periwinkle (**Vinca major*), and Photinia (*Photinia* sp.). Some native landscape plantings were also present in the garden bed areas including *Hardenbergia violacea*, *Boronia* sp., *Callistemon* sp. as well as some regrowth Cootamundra Wattle.

The implications of this species composition in relation to vegetation community status as well as the potential for any listed threatened flora species to occur in this area is discussed further below.

3.1.2 Threatened flora

There was no evidence of any local threatened flora species within the site and based on the observed habitat conditions, there is considered to be a low probability of any listed threatened flora species occurring within the site. This is also consistent with the threatened flora mapping by the ACT Government (ACTmapi), which also does not show any records of the threatened flora within the site, and only limited records of threatened flora in the surrounding area (see Figure 4). The nearest (<2km) records of any threatened flora species to the site include the following:

- Hoary Sunray (*Leucochrysum albicans* var. *tricolor*)[2]. Records for this species occur in the broader area west of the site with the nearest record being approximately 500m to the west of the site in woodland areas about the lower footslopes of Mount Majura, as well as on the western outskirts of Hackett.
- ACT-listed Orchids (Multiple species). Records and mapped potential habitat for a number of ACT (only) listed threatened Orchid species occur across most of the Mount Majura Reserve and Majura Military Training Area extending south to Mount Ainslie.

For the Hoary Sunray, this species tends to favour partly disturbed roadside/verge vegetation and is a known coloniser of bare ground. There is considered to be some marginal/limited habitat values present at the site for this species, limited mainly to open areas that are regularly mown, such as along the road verge. Based on this, there is considered to be only limited potential for the occurrence of this species at the site. This species is however relatively obvious to detect when flowering (and moderately obvious at other times to a skilled observer), and the lack of any existing records indicates that it is likely absent from the site.

For the ACT-listed Orchids, this mapping does not apply to any specific record or species but is a mapping polygon of areas where there have been one or more records and therefore, there may be some potential of a listed Orchid species being present. Typically, these orchid species favour more natural and less-disturbed areas and so there is considered to be little potential for their occurrence within the site.

[2] This species is listed as Endangered under the Commonwealth EPBC Act but is not listed under ACT legislation.

With regard to other threatened flora species included in the EPBC PMST results (Appendix A), there is also considered to be little potential of any of these species occurring at the site (refer to the threatened species evaluations at Appendix B for further information on the potential likelihood of occurrence of these species at the site).

Figure 3. Site assessment areas – north

(note: southern two-thirds of site inside red boundary line is not included in the proposed development and described only where relevant in this assessment).

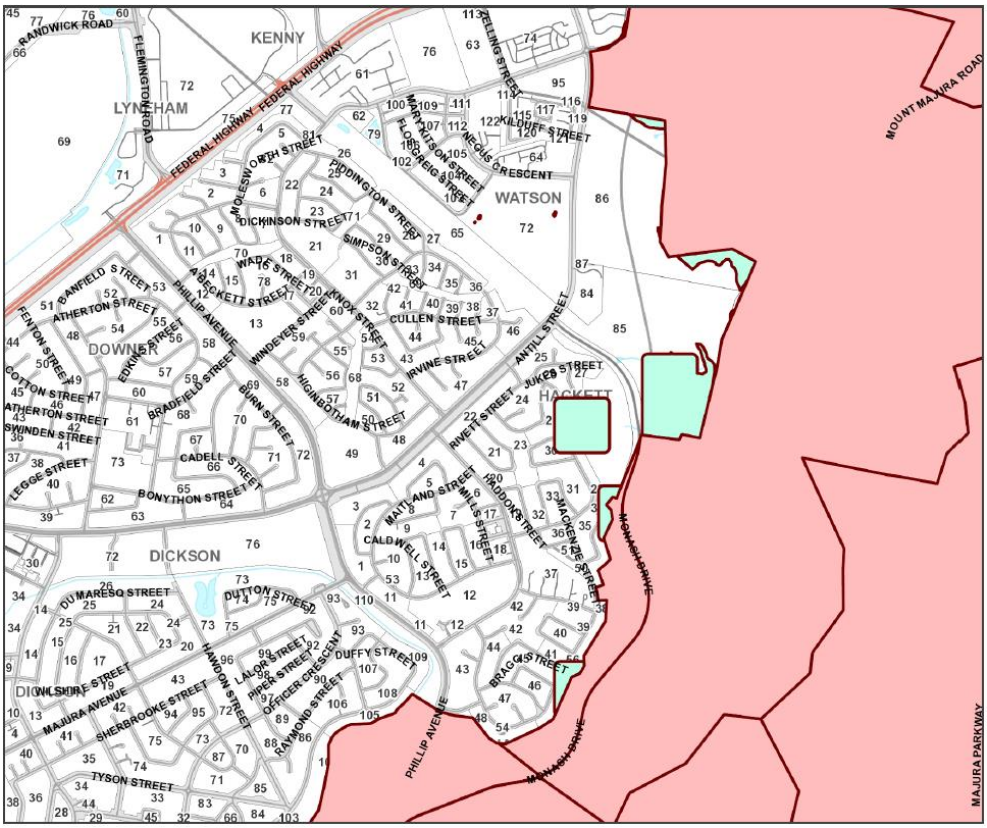

Figure 4. ACTmapi records of threatened flora in the local area.
(Light blue polygons = Hoary Sunray; Pink polygon = ACT-listed Orchids)

3.1.3 Threatened ecological communities

As noted in the flora surveys reported above, the site has been divided into two separate and distinct areas based on the observed floristic values present. Area A supports a relatively intact area of grassy woodland located mainly across the western portion of the subject site (being the northern one-third of the entire block). Area B supports mainly non-native tree plantings and occupies the central and eastern parts of the site, about the existing buildings and carpark (as shown in Figure 3).

Area B can be immediately ruled out as having any potential to be part of an identifiable threatened ecological community (TEC) on the basis of the mostly planted and non-native tree species composition in this area as well as the highly modified groundcover vegetation. This is consistent with the ACT vegetation communities mapping (per Baines *et. al*., 2013) which identifies this area as supporting *URB: Urban and Developed Areas* (see Figure 5).

The woodland patch of Area A was also assessed as not forming part of any identifiable TEC. Specifically, the vegetation values of this area do not meet the relevant criteria for either the *White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland* (critically endangered ecological community (CEEC)) listed under the EPBC Act; or the *Yellow Box Red Gum Grassy Woodland* (endangered ecological community (EEC)) listed under the ACT NC Act as discussed further below.

As noted in the site flora values described above, the woodland of Area A was observed to support a predominantly native tree canopy composition, dominated mainly by Apple

Box (in the northern half of the patch subject this assessment) as well as Brittle Gum as a co-dominant species, mainly in the central and northern parts of the woodland patch. Yellow Box and Red Box were also common, mainly in the central and southern parts of the patch (outside of the area of the site this assessment focusses on), and some Blakely's Red Gum occurring in the southern margins as well as being co-dominant within the small patch extending into the eastern margins of the site (also outside of the area of the site this assessment focusses on).

Based on this tree species composition, the woodland patch could form part of two separate vegetation mapping units, including the *Yellow Box, Apple Box tall grassy woodland* (u178) ecological community across the northern "half" of the site (within the area of this assessment), and *Blakely's Red Gum – Yellow Box woodland* (u19) ecological community across the southern "half" of the site. A small patch of the *Blakely's Red Gum – Yellow Box woodland* (u19) ecological community also occurs in the eastern margins of the site (see Figure 7). The combined total mapped area/extent of these patches of vegetation is 1.28ha, comprised of the following:

- *Yellow Box, Apple Box tall grassy woodland ecological community* (u178): Total Patch Area = 0.7ha comprised of Western Patch = 0.5ha; Eastern Patch = 0.2ha
- Blakely's Red Gum – Yellow Box woodland (u19): Patch Area = 0.58ha

It is noted that both vegetation communities (and across all patches) within the site are in a somewhat modified and overall low condition. This is because of the occurrence of numerous Brittle Gum and Red Box trees, not characteristic of the communities, as well as some other non-local species, most of which are considered likely to be planted specimens, particularly in the middle parts of the site and which effectively acts as a diffuse transition zone between the two vegetation communities. Further, and most importantly, the groundcover vegetation composition across these areas is also disturbed and modified as discussed further below.

This vegetation mapping is generally consistent with the vegetation communities mapping of the ACT by Baines *et. al.*, (2013; see Figure 5) which has identified the vegetation in this area as also belonging to the (u178) *Yellow Box ± Apple Box tall grassy woodland of the South Eastern Highlands Bioregion* vegetation community. The (u19) *Blakely's Red Gum – Yellow Box woodland* is not mapped at the site but does occur in the broader surrounding areas of Mount Majura Reserve.

The Yellow Box – Apple Box woodland (u178) along with the *Blakely's Red Gum – Yellow Box woodland* (u19) communities are both components of the *White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and derived Grasslands* listed under the EPBC Act and *Yellow Box-Red Gum Grassy Woodland* listed under the ACT NC Act. Collectively, this community has been referred to as Box Gum Grassy Woodland (BGGW).

This is also generally consistent with the ACTmapi Ecological Communities mapping which identified this area as *Potential Threatened Woodland* (see Figure 6). It is noted however that the *Potential Threatened Woodland* mapping layer does not always/automatically accord with the BGGW TEC, but that it could *potentially* form part of the TEC. Further (site-based) investigation of the floristic composition of the area is required to confirm this.

The Commonwealth's Policy Statement[3] and the ACT Scientific Determination Conservation Advice criteria/definition of this BGGW community, includes that along with requiring either Yellow Box or Blakely's Red Gum to be (or have been) one of the dominant canopy species, the patch (generally) must have a ground cover dominated by (i.e. 50% or more of the overall cover of perennial species is to comprise) native grasses and forbs[4]. Areas that do not meet this requirement are not regarded as BGGW under the Commonwealth criteria. However, under the ACT criteria, areas that do not have a predominantly native understorey but have 20 or more mature[5] trees per hectare (on average) and/or or support natural regeneration, may still be regarded as low condition BGGW. Derived (secondary) grasslands develop when the tree canopy cover is removed (or suffers dieback) but a relatively diverse native understorey remains intact.

Based on the results of the site survey, the site was found to support a predominantly non-native groundcover vegetation composition including having both more non-native species diversity (30 exotic to 13 native species), as well as a combined greater level of observed cover comprised of non-native species (see flora list at Appendix B). Given this, the patch would not meet the commonwealth EPBC-listing criteria for the BGW TEC.

When considering the woodland values against the criteria for the ACT NC Act listing of the BGGW TEC, it is noted that many of the trees at the site are likely to have been planted specimens, with only a few Apple Box individuals in the north of the site, as well as some scattered larger Yellow Box and Apple Box trees in the southern half of the site considered likely to be remnant trees (i.e. trees that existed at the site pre-development of the area). Some of the earlier tree plantings are also quite large and reaching a mature life-stage but are not likely to be remnant trees.

Based on the mapping of the existing trees at the site[6], it was determined that there are exactly 20 mature trees in the western patch, including 15 in the main area south of the existing driveway and 5 in the small area north of the driveway (see Figure 7). This area is approximately 1.08ha in area. This equates to an average mature tree density of 18.5 trees/ha for this western patch. There are also three (3) mature trees in the smaller eastern patch, which is approximately 0.2 ha in area This equates to an average mature tree density of 15 trees/ha for this eastern patch. Overall, this equates to a total of 23 mature trees within an area of 1.28ha at an average mature tree density of 18 trees/ha.

In addition to the above, there was also no notable current/ongoing natural regeneration (such as younger saplings) of native trees. Some of the smaller Brittle Gum in the central portions of the site could have been from natural regeneration some time ago, but there

[3] White box - Yellow box - Blakely's red gum grassy woodlands and derived native grasslands
[4] Note: there are some minor differences between the ACT and Commonwealth criteria, however for this preliminary assessment, the general rule of 50% native groundcover has been followed for determining the condition and whether it could meet the listing criteria.
[5] Mature tree is not defined under the ACT BGGW criteria but is defined elsewhere under the ACT NC Act as trees with a trunk dia >50cm dbh; taken from *CONSERVATION ADVICE: LOSS OF MATURE NATIVE TREES (INCLUDING HOLLOW BEARING TREES) AND A LACK OF RECRUITMENT* for the KTP listing (Notifiable Instrument NI2018-536). Note also, measurement taken for a single (dominant) trunk only. This differs to measurements in the tree assessment report (Canopy Tree Experts) which uses a cumulative total of all trunk diameters for trees with multiple trunks.
[6] Note: due to access and survey data restrictions, only trees present within the site were surveyed. Trees located on adjacent blocks of land are not included in this assessment.

is no evidence of ongoing regeneration and there is unlikely to be any opportunity for this to occur given the current management (mowing) of the site.

Given the above, the woodland areas at the site are not considered to form part of the ACT NC Act-listed BGBW TEC.

Finally, none of the areas within the site are considered likely to support a Natural Temperate Grassland (NTG) TEC. The criteria for this TEC includes that as well as being generally treeless, it is also required that 'native grasses are usually dominant' (i.e. comprise at least 50% of the foliage cover of the ground). Although some of the open treeless areas do have some elements of this community based on the flora species observed, they have been degraded by the extent of weed infestation to the point that they would be unlikely to qualify for the NTG TEC.

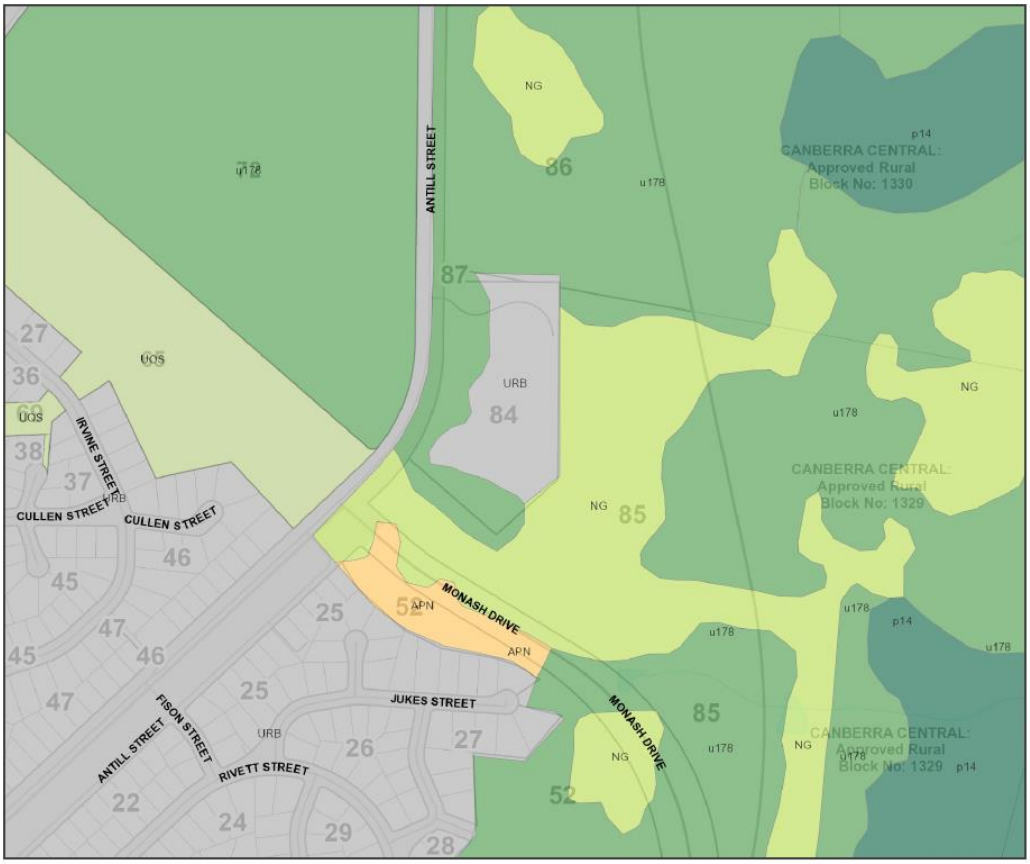

Figure 5. ACTmapi Vegetation Communities mapping for the area

Figure notes: URB = Urban and Developed; u178 = Yellow Box ± Apple Box tall grassy woodland; u19 = Blakely's Red Gum – Yellow Box tall grassy woodland; NG = Native Grassland.

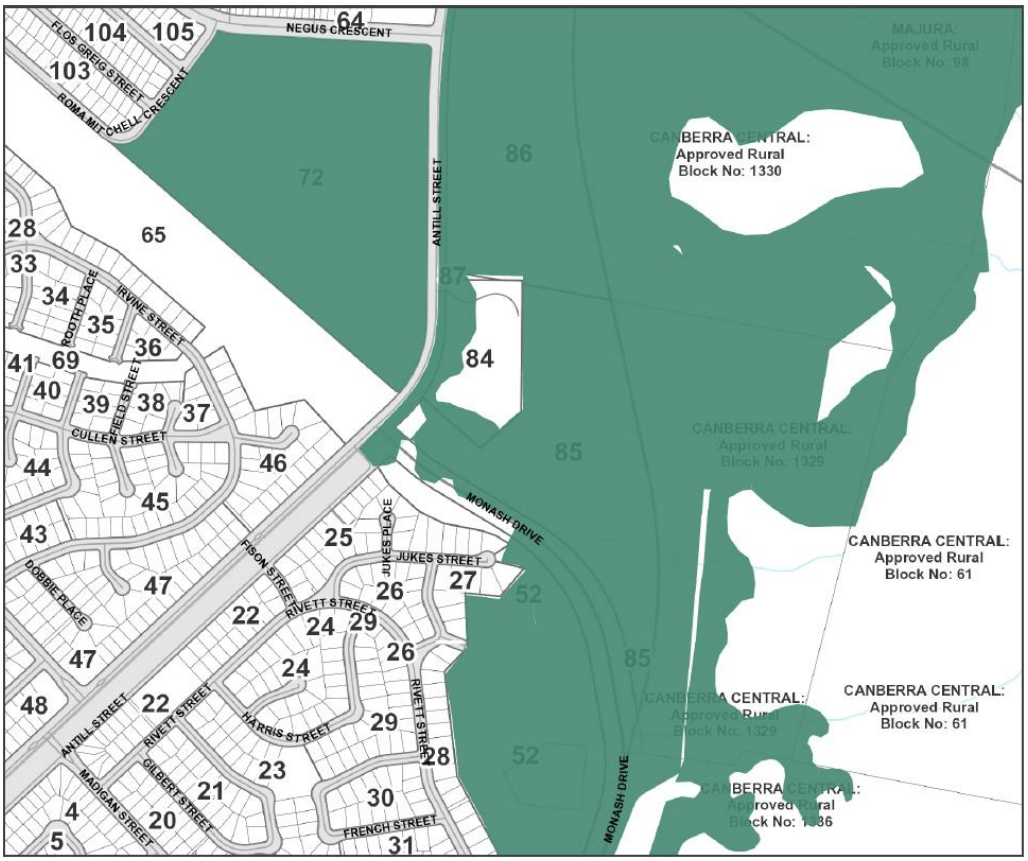

Figure 6. ACTmapi Threatened Ecological Communities (Potential Threatened Woodland) mapping for the area

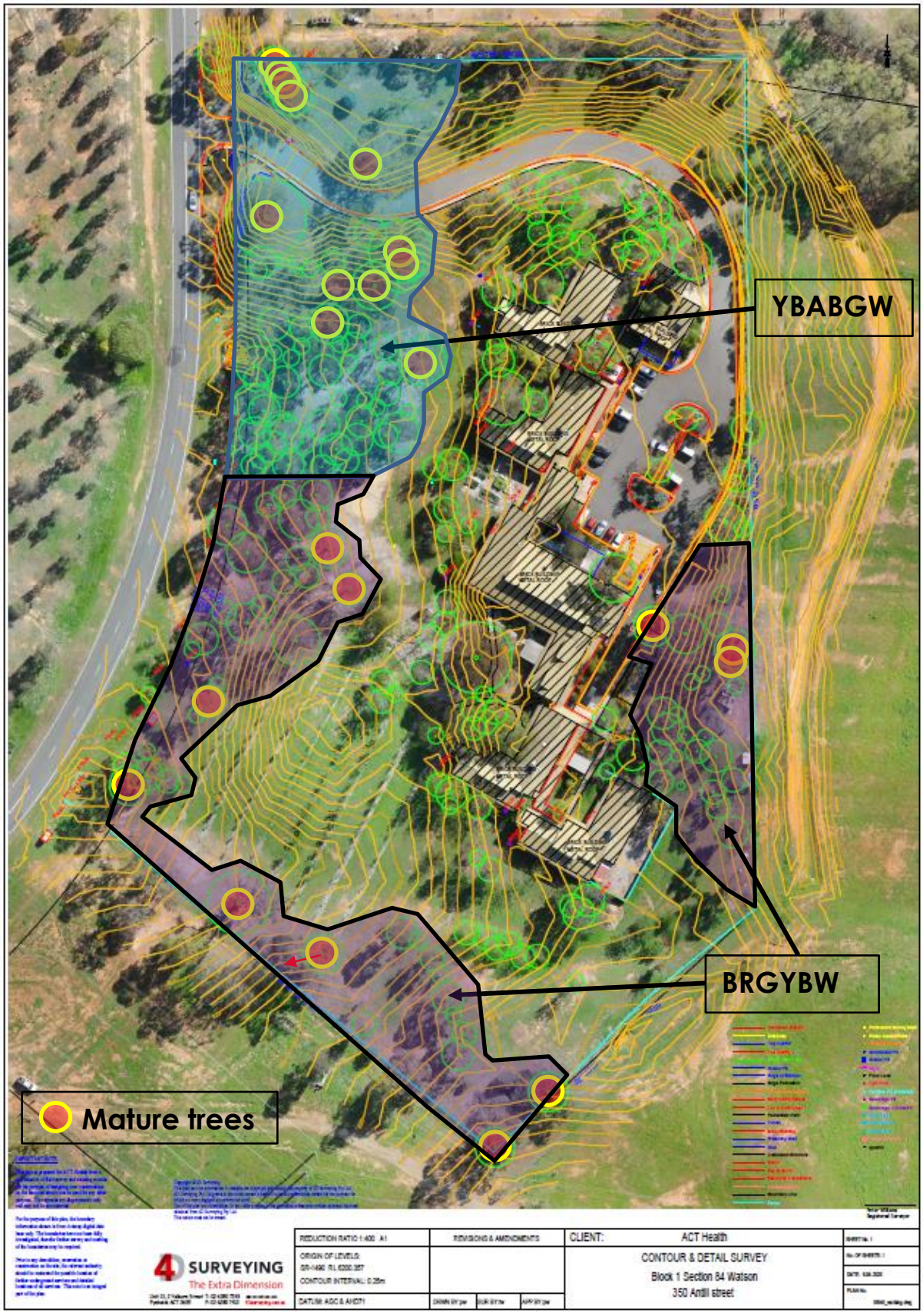

Figure 7. Mature trees and vegetation communities within the potential threatened woodland patch

YBABGW = Yellow Box, Apple Box tall grassy woodland ecological community (u178). Patch Area = 0.7ha (Western Patch = 0.5ha; Eastern Patch = 0.2ha)
BRGYBGW = Blakely's Red Gum – Yellow Box woodland (u19) Patch Area = 0.58ha

3.2 Fauna and habitats

3.2.1 Fauna values at the site

For this assessment, the site survey approach focussed mainly on assessing fauna habitat values and specifically, the potential for listed threatened species to occur at the site, as opposed to the completion of any specific or targeted fauna surveys that focus on direct observations of fauna themselves. Accordingly, a full inventory list of all fauna species seen or likely to occur at the site has not been compiled.

The site is located on the outer urban edge and is directly contiguous with the larger open space reserve system of Mount Majura which supports extensive remnant woodland habitats likely to support a wide variety of native fauna species. However, in general, the site itself was observed to provide marginal habitat values for native fauna. This is limited mainly to some arboreal habitat values for native birds and potentially some arboreal native mammals including mainly possums (a number of trees with scratch marks on the trunk were observed at the site). These values are provided by both the native and non-native trees across the site, although the native species are regarded generally as having more habitat values for native fauna.

The arboreal fauna habitat values at the site, however, appear limited mainly to foraging habitat, with very little potential breeding habitat present. Notably, only one tree with an observable hollow was recorded on the block, this being the large Apple Box located on the southern boundary, outside of the northern area of the site subject to this assessment. No nests were seen in any of the trees at the site.

Some terrestrial foraging habitat values are also present, although this is likely to be restricted to use by more common and widespread species well adapted to peri-urban landscapes such as Eastern Grey Kangaroos (*Macropus giganteus*) and the introduced European Rabbit (*Oryctolagus cuniculus*), both of which are known to use the site based on the presence of scats. Other common terrestrial species including introduced small mammals (i.e. rats, mice as well as domestic and feral cats and dogs), as well as some common reptiles may also occasionally occur at the site, although none were seen during the site visit. However, no important breeding or other shelter habitats for (mainly smaller) terrestrial fauna are present within the site such as fallen logs, rocky outcrops, burrows/dens, and in general, has a very low structural diversity at the ground level, including low vegetation structure with minimal cover.

The site does not support any notable aquatic habitats, with the exception of a small artificial culvert extending from beneath Antill Street into the western margins of the site. When inundated, this may provide some limited habitat for a number of common amphibians, though none were heard calling during the site inspection.

The potential for the site to support any listed threatened bird species is discussed further below.

3.2.2 Threatened fauna

No threatened fauna species were recorded within the site during the brief daytime survey (noting that detailed and targeted threatened species surveys were not undertaken for this assessment). A review of the ACTmapi Significant Species database also does not identify any habitat or records of any listed threatened fauna as occurring either within or immediately adjacent to the site (see Figure 8). The nearest records of any threatened species to the site includes the following:

- Rosenberg's Goanna (*Varanus rosenbergii*). The nearest records of this species occur about 400m to the east, within the Mount Majura reserve.
- Stiped Legless Lizard (*Delma impar*). The nearest records of this species exist more than 1.5km to the northeast, and north of the Federal Highway at Kenny.
- Golden Sun Moth (*Synemon plana*). The nearest records of this species exist more than 1.5km to the northeast, and north of the Federal Highway at Kenny.

Based on the known ecology of these species and the habitat conditions observed at the site, there is considered to be little potential for any of these (or other) threatened species to occur anywhere within the site.

For the Rosenberg's Goanna, this species is often closely associated with the occurrence of termite mounds that adult females use for breeding by laying their eggs inside the mound for incubation. They are also typically associated with more intact areas of remnant woodland ecosystems, present to the east at Mount Majura Reserve, but not present within the site. Based on this, the site is not regarded as supporting suitable habitat for this species.

For the Striped Legless Lizard, this species typically occurs in Natural Temperate Grassland but has also been captured in grasslands that have a high exotic component as well as in secondary grassland near Natural Temperate Grassland and occasionally in open Box-Gum Woodland. Suitable habitat is where grassland is dominated by perennial, tussock-forming grasses such as Kangaroo Grass *Themeda australis*, spear-grasses *Austrostipa* spp. and poa tussocks *Poa* spp., and occasionally wallaby grasses *Austrodanthonia* spp. It may sometimes be present also in modified grasslands with a significant content of exotic grasses as well as in grasslands with significant amounts of surface rocks, which are used for shelter. A key component of suitable habitat is the presence of adequate tussock structure to provide cover/shelter habitat for lizards. Based on the relatively dense tree cover and lack of any suitable tussock structure or surface rock for shelter, the site is not considered suitable for this species.

For the Golden Sun Moth, this species typically occurs in Natural Temperate Grasslands and open grassy Box-Gum Woodlands in which the groundlayer vegetation is dominated by Wallaby grasses (e.g. *Austrodanthonia* spp.) which are also typically associated with other grasses particularly spear-grasses or Kangaroo Grass (*Themeda australis*). The species has also, more recently, been recorded occupying grasslands dominated by the introduced Chilean Needlegrass (*Nassella neesiana*). Grasslands where the Golden Sun Moth occurs are typically low and open; the bare ground between the tussocks is thought to be an important microhabitat feature for the Golden Sun Moth, as it is typically these areas on which the females are observed displaying to attract males. Based on the relatively dense tree cover and shade levels and the lack of suitable grassland species

composition (i.e. no Wallaby Grasses or Chilean Needlegrass was observed), the site is not considered suitable for this species.

In addition to the above, some threatened native bird species may have the potential to visit the site from time-to-time, on an irregular basis, including (as notable examples) the Superb Parrot (*Polytelis swainsonii*), Gang-gang Cockatoo (*Callocephalon fimbriatum*), Varied Sitella (*Daphnoesitta chrysoptera*) and Brown Treecreeper (*Climacteris picumnus)*. However, no active nests were seen and only one of the trees at the site was observed to support any hollows, as mentioned above, although this was regarded as a hollow of low potential value given its features and apparent shallow depth. Consequently, the breeding/nesting habitat values of the site are considered to be limited, and unlikely to provide important habitat that any listed threatened avian species would be reliant on for maintaining a local population. The availability of expansive natural woodland habitat (of several hundred hectares of relatively intact woodland habitat) nearby to the site also would reduce the reliance of local bird populations on the site.

There is no suitable habitat within the site for any listed threatened mammal or amphibian species known to occur in the region.

3.2.3 Ecological Connectivity

Ecological connectivity is an important factor in determining overall habitat quality for almost all (native) fauna. Fauna movement is of vital importance in establishing viable populations of animals as it assists in breeding between individuals of different local sub-populations and populations which maintains genetic diversity, and also allows animals to be able to move between habitats either in response to seasonal factors or to exploit habitat resources in other areas (such as migratory species). Ecological connectivity also enables some species to move to new areas if the habitat quality of their original environment becomes degraded or otherwise unsuitable for them to persist there.

The subject site is likely to play only a minor role in maintaining ecological connectivity in the local area. Although the site does support some treed/woodland habitats and also maintains direct connectivity with the expansive areas of remnant woodland to the east within the Mount Majura Reserve, the site does not play a vital role as a corridor for maintaining connectivity further to the west or south. Although some woodland habitat occurs to the west of the site, there is existing, and likely better connectivity to this area to the north of the site. At the broader scale, the important habitat areas of this north-eastern part of the ACT are associated mainly with the extensive woodland tracts in the Mount Majura reserve and extending further south beyond Mount Ainslie and the open grassy woodland ecosystems of Kenny to the north. The site does not play a role in supporting connectivity between these habitat areas. Local connectivity to the east-west is already somewhat interrupted by Antill Street which sees regular (high) traffic volumes and likely will be extended in the future, with only limited areas of potential habitat/ecosystems to the west of the site. Given this, the site is believed to be of little importance in providing or maintaining ecological connectivity in the area.

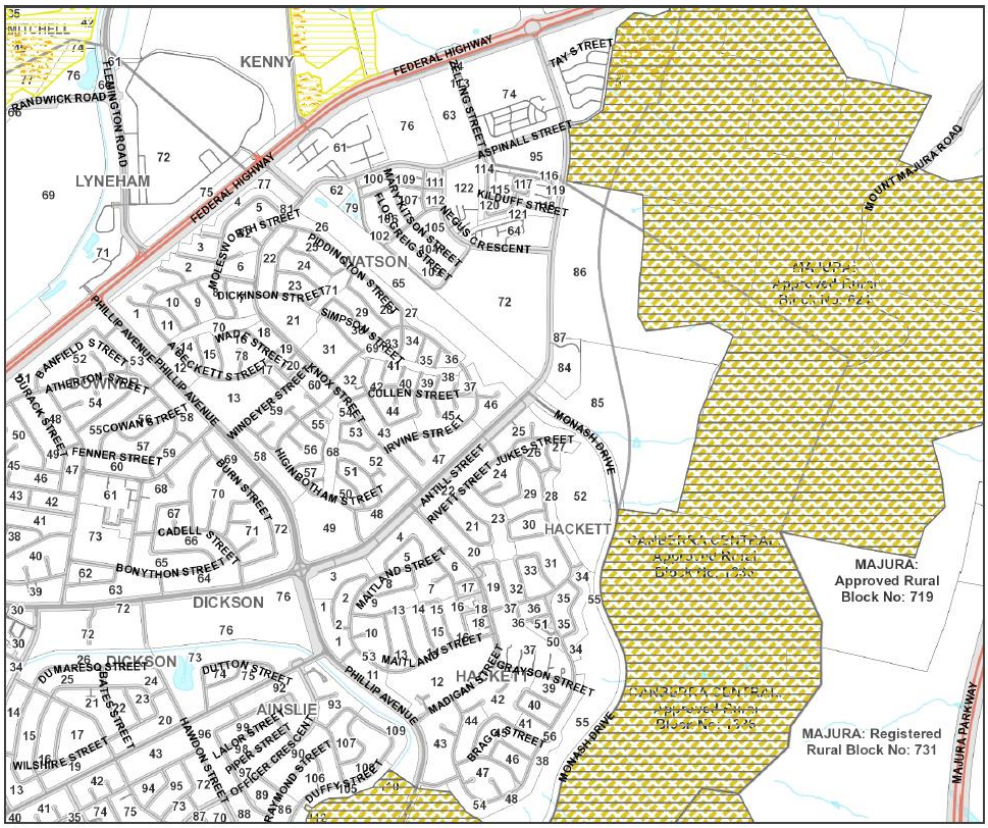

Figure 8. ACTmapi threatened fauna records in the local area
(Image legend: Yellow horizontal hatch =Striped Legless Lizard; Gold diagonal hatch = Rosenberg's Goanna; Orange dots = Golden Sun Moth)

4 ASSESSMENT OF POTENTIAL IMPACTS

The potential impacts associated with the proposed redevelopment are primarily associated with the removal of vegetation, and include the following:

- Impacts to native flora.
- Impacts to native fauna
- Loss of ecological functions and processes

4.1 Impacts to native flora

4.1.1 Impacts to existing trees

The proposed vegetation clearing associated with the project will involve the removal of a small number of the existing trees at the site, including specifically the removal of four of the surveyed (medium-large size) trees located about/adjacent to the existing northern building in this area. All four of these trees are located within the part of the site referred to as Area B for this assessment and comprise non-native planted species (being mainly Pin Oaks). No native trees will be removed, including no trees in Area A, or any of the native species occurring within Area B. Note however that this is only in relation to the proposed development of the northern portion of the block subject to the development application that this assessment has been prepared for. The trees located in the southern portion of the site, subject to a separate development application are not considered here (although it is noted that most of these trees are expected to be retained for that development as described in the Biodiversity Assessment Report prepared for that DA by PATH Co, 12/10/2022).

Based on the proposed development demolition plan, this removal equates to about 7% of the overall number of trees in this area (at about 60 trees), and importantly, 0% of the native tree species component in this area, with the native woodland patch of Area A to be wholly protected from development impacts.

In addition to this, the intended site landscaping design principles for the site will incorporate a focus on biodiversity values and will aim to support the existing ecological community, including providing habitat and food sources for local insects, birds and animals. This will involve the use of appropriate native tree and shrub species in site revegetation activities (see Landscape Plans; REF).

Given the above, the proposed removal of the trees would not result in the loss of species diversity and richness at the site or in the local area. Additionally, other values such as overall tree canopy cover, while likely to be temporarily reduced in Area B, supporting mostly non-native species, will be retained in the more valuable native woodland patch of Area A. Consideration of potential impacts of the tree removal in relation to the overall vegetation community status is discussed further below.

4.1.2 Impacts to groundcover vegetation

The groundcover vegetation was observed to be relatively similar across the site and between the two areas as described in Section 3. As such, the impacts of the proposed development on the groundcover vegetation at the site are considered to be essentially

the same for both areas and therefore described as a whole for the project (rather than each area separately).

As noted in Section 3, the groundcover vegetation across the site was observed to be highly modified, and managed (regularly mown), and dominated by non-native species. Based on these observations as well as the desktop assessment, there is considered to be little potential for the site to support any listed threatened (groundcover) flora species. Given this, the proposed development is not expected to result in any unacceptable impacts on local flora values (i.e. native species diversity or richness) or any threatened flora species.

4.1.3 Impacts to vegetation communities

The vegetation at the site is not considered to meet the criteria for any listed threatened ecological community (TEC). Specifically, the vegetation within Area B can be ruled out as being part of the BGGW TEC as it is dominated mainly by planted, non-native tree species and a highly modified groundcover. The vegetation within Area A, while supporting numerous native trees, including both Yellow Box and Blakely's Red Gum species, is also not considered to be consistent with the criteria for mapping as part of the Box Gum Grassy Woodland (BGGW) TEC. This is on the basis that the groundcover vegetation is dominated by non-native species, and that there are less than 20 mature trees/ha present in this patch as described in Section 3.

Notwithstanding the above, and taking the precautionary principle approach, even if this vegetation did meet the criteria for mapping as part of the BGGW TEC, the proposed development would not result in a significant impact to the TEC. This based on the fact that the development is to be entirely located outside of the woodland patch of Area A and wholly within Area B.

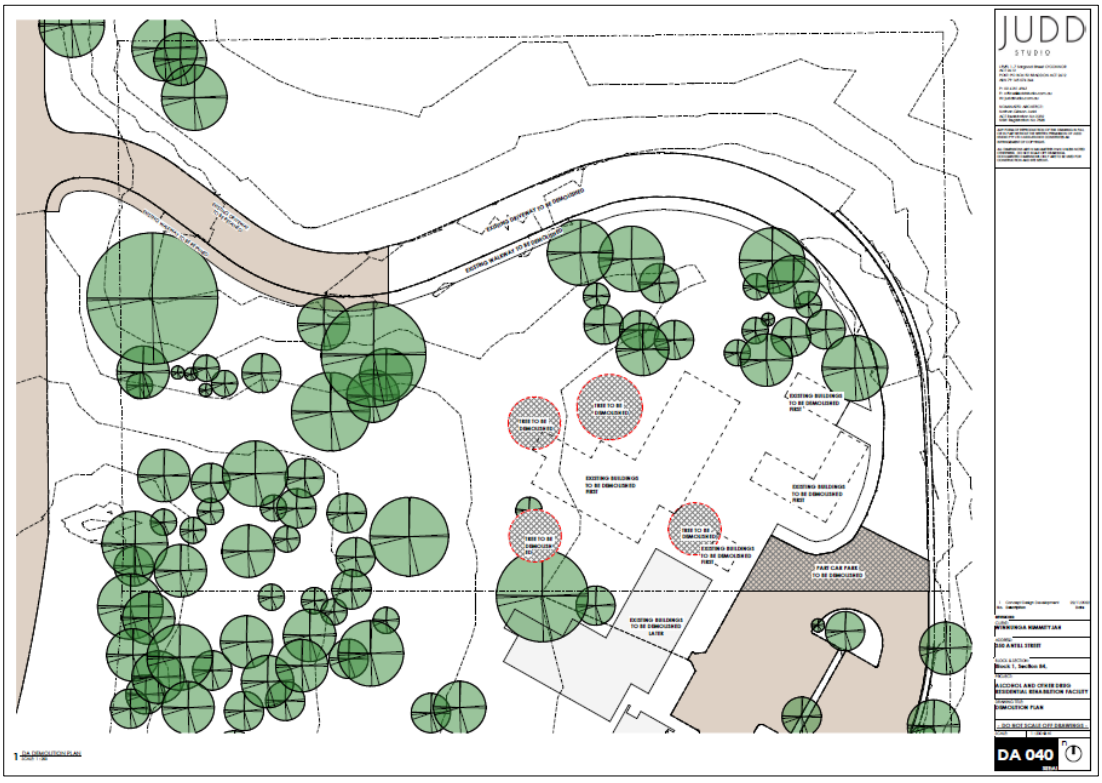

Figure 9. Demolition plan showing proposed tree removal

4.2 Impacts to native fauna

The potential impacts of the project on native fauna include the following:

- Loss of breeding and foraging habitat for arboreal and terrestrial fauna (no aquatic habitats are present within the site that would be impacted)
- Direct impacts through injury or death during habitat clearing activities

4.2.1 Impacts to arboreal fauna habitat values

The project will result in the removal of only four large trees within the northern site area subject to this assessment. As noted in Section 3, this vegetation may provide some limited foraging habitat values for native arboreal fauna. However, given the retention of the native woodland within Area A, combined with extensive foraging habitat opportunities provided within the remnant woodland areas of Mount Majura and also within the urban areas as well for these fauna types, the loss of this vegetation is not expected to result in any notable reduction in foraging habitat opportunities for native arboreal fauna in the local area. In addition, the development will include replacement landscape plantings of suitable native and non-native trees which will, over time, offset these minor losses.

The proposed development also would not result in any notable impacts on potential breeding habitat values for native arboreal fauna in the local area. As stated, there were no hollow-bearing trees or nests observed within any of the trees in the northern part of the site subject to this assessment, with only one hollow-bearing tree observed along the southern block boundary outside of the area subject to the proposed development.

It is also noted from the desktop assessment that there are no records of any listed threatened arboreal fauna species at the site and based on the observed habitat values, none are considered likely to occur at or utilise the site for breeding purposes. Given this, the proposed development is considered unlikely to result in any notable losses of important breeding habitat values/opportunities for native arboreal fauna in the local area.

Potential direct impacts of the proposed development on resident arboreal fauna are discussed further below.

4.2.2 Impacts to terrestrial fauna habitat values

The proposed development of the site is considered unlikely to result in any unacceptable to impacts to native terrestrial fauna or their habitats. As stated in Section 3, the site provides marginal habitat values for terrestrial fauna, limited mainly to common species such as kangaroos and possibly some small reptile species that are well adapted to these per-urban modified environments. Importantly, as noted from the desktop and site-based assessments, the development site is considered unlikely to support any listed threatened terrestrial fauna species. Given the minor scale of impacts to terrestrial fauna habitats and the occurrence of extensive better-quality habitats within the adjacent Mount Majura reserve, no significant or otherwise unacceptable impacts to native terrestrial fauna are expected.

4.2.3 Direct impacts through injury or death during construction

Direct impacts to native fauna through injury death could occur during the construction phase as a result of resident animals present in vegetation at the time of construction being crushed/struck by machinery and equipment. The potential for this to occur would be primarily during the felling of trees, with minimal understorey or groundcover habitats likely to contain resident native fauna observed at the site (noting there are some active rabbit burrows present in the area). Therefore, fauna species that may be at risk from impacts during clearing activities include mainly resident birds resting or taking shelter in trees. However, most avian species (likely to occur at the site) are highly mobile species and are capable of avoiding disturbance activities, unless breeding.

As noted in Section 3, the fauna habitat values of the site are limited mainly to foraging habitat, with very little observed breeding habitat, such as hollow-bearing trees (HBT) or stick nests. Daytime clearing activities are unlikely to impact foraging animals (birds) as these animal will simply fly away from the impact area. The main concern would therefore be any breeding/nesting fauna in the trees which is considered highly unlikely given the lack of any observed breeding habitats as previously stated.

Given the above, direct impacts to fauna during vegetation clearing and other construction activities is considered unlikely. Notwithstanding this, it is still important to ensure that where possible, impacts to all native fauna, whether common species or otherwise, are avoided or minimised. Consequently, it will be important to ensure that appropriate controls are put in place during the construction phase to minimise potential impacts to native fauna. Management recommendations are provided in Section 6.

4.3 Loss of ecological functions and processes

The site is considered to be of only moderate importance in providing/maintaining ecological functions and processes in the local area. As stated in Section 3, the site supports very limited potential breeding habitat and some marginal foraging habitat. The development is therefore unlikely to impact on the life-cycles for native species generally.

The site is likely to play only a minor role in maintaining ecological connectivity in the broader area with existing major ecological corridors associated mainly with the extensive woodland tracts in the Mount Majura reserve, which would not be affected by the proposed development. Local connectivity to the east-west is already somewhat interrupted by Antill Street which sees regular (high) traffic volumes and likely will be extended in the future. Given the proposed development will retain much of the existing woodland patch along the western site boundary, which also maintains some (minor/narrow) connectivity to the north, the site will continue to support some east-west connectivity. East-west connectivity is also provided by undeveloped lands further north and also would not be affected by the development. The proposed development is therefore unlikely to fragment any important habitats or impact on ecological connectivity in the local area.

No other important ecological functions or processes are known to be associated with the site that would be impacted by the proposed development.

5 STATUTORY APPROVAL CONSIDERATIONS

5.1 Commonwealth EPBC Approval Requirements

Given the site does not support any listed threatened species or ecological communities as established by this assessment, and accordingly, that no significant impacts to these or any other Matters of National Environmental Significance (MNES) established under the EPBC Act, a referral to the commonwealth government of the proposed development is not considered necessary.

5.2 ACT Environmental Planning Approval Requirements

As stated above, this assessment has established that the site does not support any listed threatened species or ecological communities that could be impacted by the proposed development. Accordingly, the project does not trigger the requirement for an Environmental Impact Statement (EIS) to be completed in accordance with the provisions of Schedule 4, Part 4.3, Item 1 of the ACT PD Act.

Also of note under the PD Act is the trigger for an EIS to be completed for proposals that involve the clearing of more than 0.5ha of 'native vegetation'. In this instance, although the open grassland areas are unlikely to meet the definition of native vegetation (as more than 50% of the cover/abundance of species is comprised of introduced exotic species), (some of) the treed areas would meet the definition of native vegetation. As noted above, none of the native trees in the northern portion of the site subject to this assessment will be removed. Therefore, this action also would not trigger the requirement for an EIS under Schedule 4, Part 4.3 Item 2 of the PD Act.

In addition to the above, the ACT NC Act establishes a list of Key Threatening Process (KTP) to important biodiversity values. One such KTP is the *Loss of mature native trees (including hollow bearing trees) and a lack of recruitment* (Notifiable instrument NI2018–536). This KTP listing seeks to limit the loss of important (mature and/or hollow-bearing) trees in the ACT as they provide important habitat for a number of listed threatened species which could be adversely affected by their removal. Under the definitions of this KTP, "mature trees are considered to be those above 50 cm DBH." As noted, only four large trees are proposed to be removed, all of which are non-native and therefore would not be subject to this KTP listing which deals with native trees.

Given the above, a request to the ACT Conservator for an Environmental Significance Opinion (ESO) is not considered necessary for this proposed development project.

6 CONCLUSIONS AND RECOMMENDATIONS

6.1 Summary Conclusions

This biodiversity assessment report was prepared to support the proposed development of the northern (one-third) portion of Block 1, Section 84, Watson, 350 Antill Street. The proposed development includes the redevelopment of the site to provide modern, fit-for-purpose alcohol and other drug residential rehabilitation facility.

The assessment found that the biodiversity values of the site can be categorised into two distinct areas, being the highly modified central parts of the site, about the existing buildings and carpark which supports mainly planted non-native ornamental trees, and the intact areas of native woodland occurring along the entire western portion of the site.

The highly modified central portion of the site (referred to as Area B in this report) was found to have minimal biodiversity values, with very few native tree species present in this area, and all of which are likely to be planted specimens. No threatened flora species are likely to occur in this area and the vegetation collectively would not meet the criteria for any natural vegetation community and is identified (correctly) as *Urban and Developed* in the ACT vegetation communities mapping.

The vegetation across the western portion of the site (referred to as Area A in this report) is characterised as a (dense) native woodland patch, dominated entirely by native species. However, no listed threatened flora species are known or considered likely to occur in this part of the site either. This vegetation is identified as being part of the *Yellow Box ± Apple Box tall grassy woodland*. This vegetation community is a component of the *White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and derived Grasslands* threatened ecological community (TEC) listed under the EPBC Act (as Critically Endangered) and *Yellow Box-Red Gum Grassy Woodland* listed under the ACT NC Act (listed as Endangered). Collectively, this community is referred to as Box Gum Grassy Woodland (BGGW).

However, to be part of the BGGW TEC, the vegetation values of the woodland patch must be consistent with the criteria established under the listing of the TEC. In this instance, the vegetation within this woodland patch is not considered to meet the criteria as it does not support a predominantly native understorey, and also, that there are less than 20 mature native trees per hectare (on average) across the site.

Even if taking the precautionary principle approach and assuming the vegetation does meet the criteria for the BGGW TEC, the proposed development would not result in a significant impact to the TEC given the development will be located entirely outside of this woodland patch. Future site landscaping of open space areas using appropriate native plants will also seek to enhance the biodiversity values of the woodland areas of the site.

The site was also found to support minimal fauna habitat values, limited mainly to some moderate-quality foraging habitat, and low-quality breeding habitat. None of the trees within the northern subject area were observed to have any (stick) nests or hollows. Additionally, the fauna species likely to be encountered at the site are limited mainly to common widespread and mobile fauna types that are well-adapted to these (peri)urban

environments. Based on the observed habitat values and the desktop assessment, the site is considered unlikely to support any listed threatened fauna species.

The proposed development will result in the removal of only four of the existing trees within Area B located about the existing buildings. All of these trees are planted non-native specimens. The impacts of the proposed tree removal is not regarded as being significant given the marginal fauna habitat values they provide, combined with the retention of a far greater number of trees within the woodland patch. Consequently, much of the existing values of the site will be protected, including allowing provision for the future recruitment of mature and hollow-bearing trees. Parts of the site that are undeveloped will also be landscaped to enhance the values of the retained open space parts of the site.

Based on the findings of this assessment, the proposed redevelopment of the site would not trigger the requirement for an EIS/ESO under the ACT PD Act or the requirement to refer the action under the Commonwealth EPBC Act.

Finally, based on the overall small site area, the observed values of the site, and the desktop assessment, there is no foreseeable requirement to undertake further biodiversity surveys of the site, particularly given the low probability of occurrence for any listed threatened species. Notwithstanding this, some (preliminary) management or mitigation measures associated with the construction activities for the development are provided below.

6.2 Recommendations

General (preliminary) recommendations to help ensure any unacceptable ecological impacts of the development are avoided or minimised include the following:

- A Tree Management Plan (TMP) indicating the existing trees at the site to be retained or removed, is to be prepared, including details for the protection of trees to be retained.
- A (detailed) Landscape Management Plan (LMP) should be prepared indicating the nature/type of any revegetation proposed to be undertaken. Consideration for using locally indigenous species to the greatest extent possible is strongly encouraged.
- Ensure that development design incorporates appropriate measures for capturing and treating any run-off from the site including during both at construction and operational stages of the development.
- Establishment of appropriate weed management measures to ensure that weeds are not spread from the works area during the construction stages of the development.
- Given the potential delay in timing between this assessment and the commencement of construction, it is recommended that a brief check of all trees to be removed is undertaken to ensure that no nests have been built in any of these trees. If any nests are found, a fauna spotter should be employed to assist with capturing and relocating any resident nesting fauna.

7 REFERENCES AND INFORMATION SOURCES

ACT Government 2005. *'A Vision Splendid of the Grassy Plains Extended: ACT Lowland Native Grassland Conservation Strategy. Action Plan 28*. Arts, Heritage and Environment ACT, Canberra.

ACT Government 2017. *Draft ACT native grassland conservation strategy and action plans*. Environment, Planning and Sustainable Development Directorate, Canberra ACT.

Atlas of Living Australia (ALA: 2018) *Spatial Portal*. http://spatial.ala.org.au accessed in January 2021.

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.

Department of Environment and Heritage (DEH: 2006). EPBC Act Policy Statement: *White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland (available online at:* http://www.environment.gov.au/system/files/resources/be2ff840-7e59-48b0-9eb5-4ad003d01481/files/box-gum.pdf)

Department of Environment (DoE: 2013). *EPBC Act Policy Statement: Matters of National Environmental Significance: Significant impact guidelines 1.1. Environment Protection and Biodiversity Conservation Act 1999*. Commonwealth of Australia.

NSW Office of Environment & Heritage (2022)- Threatened Species profiles. https://www.environment.nsw.gov.au/threatenedspeciesapp/

Rehwinkel, Rainer (2015). A Revised Floristic Value Scoring Method to assess grassland condition. Report to 'Grass half full or grass half empty? Valuing native grassy landscapes': to Friends of Grasslands' forum 30 October – 1 November 2014. Friends of Grasslands Inc. (www.fog.org.au)

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*[7], 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

[7] 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.

B.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?
Flora				
Yass Daisy *Ammobium craspedioides* V EPBC	Most populations of the Yass Daisy occur in the Yass District, at Lake Burrinjuck, Bookham, Rye Park and Dalton. The species is not known from the ACT. The Yass Daisy occurs in dry forest, box gum woodland and secondary grassland derived from clearing of these communities. It grows in association with a large range of eucalypts including Blakely's Red Gum (*Eucalyptus blakelyi*), Apple Box (*E. bridgesiana*), Broad-leaved Peppermint (*E. dives*), Long-leaved Box (*E. goniocalyx*), Red Stringybark (*E. macrorhyncha*), Brittle Gum (*E. mannifera*), Yellow Box (*E. melliodora*), Red Box (*E. polyanthemos*) and Candlebark (*E. rubida*). The species tolerates light grazing, as populations persist in some grazed sites. Also, some sites occur in a number of cemeteries that are mown or slashed.	Marginal	Unlikely – no nearby records	Low No
River Swamp Wallaby-grass *Amphibromus fluitans* 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).	Absent	None	No No
Canberra Spider Orchid *Caladenia actensis* 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 *Eucalyptus blakelyi, E. melliodora*, and *E. pauciflora*) and dry sclerophyll forest (dominated by *E. rossii*)	Marginal	Possible/unlikely – in woodland areas only	Low No

Species	Description of habitat	Presence of habitat	Likelihood of occurrence	Potential for Impact? AoS Required?
Mauve Burr-daisy *Calotis glandulosa* 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 Poa spp.), and montane or natural temperate grassland dominated by Kangaroo Grass (*Themeda australis*) and Snow Gum (*Eucalyptus pauciflora*) 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.	Marginal – elevation unsuitable	Unlikely	Low No
Trailing Hop-bush *Dodonaea procumbens* V EPBC	The Trailing Hop-bush is widely but patchily distributed across south-eastern Australia, where it occurs in New South Wales, Victoria and South Australia. This species grows in low-lying, often winter-wet areas in woodland, low open forests, heathland and grasslands, on sands and clays. Most populations in New South Wales occur either in in natural grassland or grassy woodland of Snow Gum (*Eucalyptus pauciflora*), usually on crests or slopes and on tilted sediments.	Marginal	None – wasn't seen	No No
Black Gum *Eucalyptus aggregata* V EPBC	The Black Gum is a rare species found from Capertee and Bathurst in central New South Wales, south through the central and southern tablelands. 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.	Marginal	None – wasn't seen	No No

Species	Description of habitat	Presence of habitat	Likelihood of occurrence	Potential for Impact? AoS Required?
Spiny Peppercress *Lepidium aschersonii* V EPBC	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 found on ridges of gilgai clays dominated by Brigalow (*Acacia harpophylla*), Belah (*Casuarina cristata*), Buloke (*Allocasuarina luehmanii*) and Grey Box (*Eucalyptus microcarpa*). In the south has been recorded growing in Bull Mallee (*Eucalyptus behriana*). 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.	Marginal – overstorey species not present and geology generally not suitable	Very unlikely. Species has not been previously recorded from ACT.	No No
Ginninderra Peppercress *Lepidium ginninderense* 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 – no wet areas	Unlikely – no nearby records	Low No
Basalt Peppercress *Lepidium hyssopifolium* 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 *Leucochrysum albicans subsp. albicans var. tricolor* 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.	Marginal	Unlikely – species was not observed at the site	Low No

Species	Description of habitat	Presence of habitat	Likelihood of occurrence	Potential for Impact? AoS Required?
Silver Sword Lily *Neoastelia spectabilis* 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
Pale Pomaderris *Pomaderris pallida* 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.	Absent	None – not seen at the site	No No
Tarengo Leek Orchid *Prasophyllum petilum* 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 (*Austrodanthonia spp*). Flowers Oct-Nov (Bishop 1996).	Marginal – woodland areas only, but understorey not suitable	Unlikely – not seen at site.	Low No
Button Wrinklewort *Rutidosis leptorhynchoides* 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	Unlikely – species was not observed at the site	Low No

Species	Description of habitat	Presence of habitat	Likelihood of occurrence	Potential for Impact? AoS Required?
Large-fruit Fireweed, Large-fruit Groundsel *Senecio macrocarpus* 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
Small purple-pea *Swainsona recta* E EPBC	Grows in grassland or grassy woodland on the Southern Tablelands and western slopes.	Marginal – woodland areas only	Unlikely - not found within the site and no nearby records	Low No
Austral Toadflax *Thesium australe* 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 (*Themeda australis*).	Marginal – woodland areas only	Unlikely - not found within the site and no nearby records	Low No

Species	Description of habitat	Presence of habitat	Likelihood of occurrence	Potential for Impact? AoS Required?
EEC's				
Natural Temperate Grassland of the Southern Tablelands of NSW and the Australian Capital Territory	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. Natural temperate grassland comprises of closed grassland, grassland and open grassland whose biomass is dominated by two or more of the perennial native tussock grasses *Themeda triandra* (Kangaroo Grass), *Austrodanthonia spp* (*wallaby grasses*), *Austrostipa spp* (speargrasses), *Bothriochloa macra* (Red Grass, Red-leg Grass) and/or *Poa* spp (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. The perennial native grasses together with the native graminoids and forbs usually comprise more than 50% of the total plant cover (Environment ACT 2005).	Absent - condition of vegetation not consistent with mapping criteria	Unlikely – see assessment against mapping criteria in Section 3	No No
Box Gum Woodland CEC EPBC	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 *Eucalyptus albens*, Yellow Box *E. melliodora* or Blakely's Red Gum *E. blakelyi*.	Present/Marginal - condition of vegetation not consistent with mapping criteria	Unlikely – see assessment against mapping criteria in Section 3	Low No

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

B.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 habitat that could potentially support these species.

Species and Status	Description of habitat[8]	Presence of habitat	Likelihood of occurrence	Potential for Impact? AoS Required?
Aves				
Regent Honeyeater *Anthochaera phrygia* E EPBC	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: 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.	Marginal. The site may provide some foraging habitat but does not provide breeding habitat,	Unlikely	Low No
Gang-gang Cockatoo *Callocephalon fimbriatum* 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,	Marginal. The site may provide some foraging habitat but does not provide breeding habitat,	Possible – occasional visitor only	Low No

Species and Status	Description of habitat[8]	Presence of habitat	Likelihood of occurrence	Potential for Impact? AoS Required?
	nuts and insects and their larvae. They nest in hollows of suitable trees.			
South-eastern Glossy Black-Cockatoo *Calyptorhynchus lathami lathami* 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 (*Allocasuarina* spp. and *Casuarina* 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.	Marginal – very few Casuarina sp. on site. Single HBT unlikely to be suitable.	Low	Low No (mitigation measures for removal of HBT will ensure no impacts)
Grey Falcon *Falco hypoleucos* V EPBC	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. 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.	Marginal. The site may provide some foraging habitat, mostly in adjacent lands, but does not provide breeding habitat, no nests seen.	Possible – occasional visitor only	Low No
Painted Honeyeater *Grantiella picta* V EPBC	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 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 Amyema.	Absent. Lack of suitable woodland vegetation and no mistletoe seen present on trees.	Unlikely	Low No

Species and Status	Description of habitat[8]	Presence of habitat	Likelihood of occurrence	Potential for Impact? AoS Required?
White-throated Needletail *Hirundapus caudacutus* 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 *Lathamus discolor* 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 surrounding area. No breeding habitat (breeds only in Tasmania)	Possible – occasional visitor only	Low No
Superb Parrot *Polytelis swainsonii* 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. Single HBT unlikely to be suitable.	Possible – occasional visitor only	Low No (mitigation measures for removal of HBT will ensure no impacts)

Species and Status	Description of habitat[8]	Presence of habitat	Likelihood of occurrence	Potential for Impact? AoS Required?
Mammals				
Large-eared Pied Bat, Large Pied Bat *Chalinolobus dwyeri* 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 *Dasyurus maculatus* 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.	None.	No No
Yellow-bellied Glider (south-eastern) *Petaurus australis australis* 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.	Marginal. Possible foraging habitat. Single HBT unlikely to be suitable.	Unlikely – no evidence of feeding and no nearby records	Low No (mitigation measures for removal of HBT will ensure no impacts)
Koala *Phascolarctos cinereus* 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 know from several sites on the southern tablelands.	Absent.	None – no nearby records	Low No
New Holland Mouse	The New Holland Mouse has a fragmented distribution across Tasmania, Victoria, NSW and Queensland. The species is now largely restricted to the coast of central and northern NSW, with	Marginal	None – no nearby records	No No

Species and Status	Description of habitat[8]	Presence of habitat	Likelihood of occurrence	Potential for Impact? AoS Required?
Pseudomys novaehollandiae V EPBC	one inland occurrence near Parkes. In the Australian Capital Territory, the species has been reintroduced to Mulligans Flat Woodland Sanctuary; it has likely been locally extinct in the area since the 1880. The New Holland Mouse has been found from coastal areas and up to 100 km inland on sandstone country and at up to 900m elevation. Soil type may be an important indicator of suitability of habitat for the New Holland Mouse, with deeper top soils and softer substrates being preferred for digging burrow. Across the species' range, the New Holland Mouse is known to inhabit open heathland, open woodland with a heathland understorey and vegetated sand dunes. sites where the New Holland Mouse is found are often high in floristic diversity, especially leguminous perennials.		(outside of Mulligans Flat)	
Grey-headed Flying-fox *Pteropus poliocephalus* 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 *Eucalyptus*, *Melaleuca* and *Banksia,* 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	
Reptiles				
Pink-tailed Worm-lizard *Aprasia parapulchella* V EPBC	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 (*Themeda australis*). Sites are	Absent. No suitable rocky outcrops are present within the site.	None. No nearby records	No No

Species and Status	Description of habitat[8]	Presence of habitat	Likelihood of occurrence	Potential for Impact? AoS Required?
	typically well-drained, with rocky outcrops or scattered, partially-buried rocks. 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.			
Striped Legless Lizard *Delma impar* V EPBC	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 *Themeda australis*, *Austrostipa* spp,. *Poa* spp., and occasionally wallaby grasses *Rytidosperma* spp. Goes below ground or under rocks or logs over winter.	Absent Lack of suitable open grassland areas and site management prevents establishment of suitable tussock structure.	Unlikely	No No
Grassland Earless Dragon *Tympanocryptis pinguicolla* E EPBC	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 (*Lycosa* spp.) and wood cricket (*Cooraboorama canberrae*), embedded surface rocks and tussocks.	Absent – lack of suitable rocky habitat	None	No No
Insects				
Key's Matchstick Grasshopper *Keyacris scurra* 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. r is usually found in native grasslands but it has	Marginal – Lack of suitable open grassland areas and suitable species compositions.	Unlikely – no nearby records	No No

Species and Status	Description of habitat[8]	Presence of habitat	Likelihood of occurrence	Potential for Impact? AoS Required?
	also been recorded in other vegetation associations containing a native grass understory (especially kangaroo grass Themeda triandra) and known food plants (particularly Asteraceae). Although it does not feed on Themeda, 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).			
Golden Sun Moth *Synemon plana* CE EPBC	The golden sun moth has been recorded in native grasslands and grassy woodlands containing wallaby grass (*Austrodanthonia* spp.), speargrass (*Austrostipa* spp.), and Bothriochloa, as well as in degraded grasslands dominated by the exotic Chilean needlegrass (*Nassella nessiana*), a weed of national significance.	Marginal – Lack of suitable open grassland areas and suitable species compositions.	Unlikely – no nearby records	No No

CE EPBC = listed as Critically Endangered under the Commonwealth *Environment Protection & Biodiversity Conservation Act 1999.*

E EPBC = listed as Endangered under the Commonwealth *Environment Protection & Biodiversity Conservation Act 1999.*

V EPBC = listed as Vulnerable under the Commonwealth *Environment Protection & Biodiversity Conservation Act 1999.*

M EPBC = listed as Migratory under the Commonwealth *Environment Protection & Biodiversity Conservation Act 1999.*

CAMBA = Chinese-Australia Migratory Bird Agreement

JAMBA = Japan-Australia Migratory Bird Agreement

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.

GF Code Refers to the Growth Form as follows: T = tree; S = shrub; G = groundcover. (Note: numbers inside brackets are for groundcover species only; numbers outside brackets are for all species).

Note: for this assessment, the groundcover and species recorded in the table below are for Area A only given the focus on assessing the values of this area against the criteria for the BGGW TEC. The vegetation of Area B supports a similar groundcover composition to Area A but with a predominantly non-native tree species composition, described in detail in Section 3, along with some minor additional planted smaller shrubs in garden beds, also described adequately in Section 3. This area clearly is of minimal conservation value floristically (i.e., clearly does not meet the BGGW TEC criteria) and so providing the list of species recorded in this area is not considered necessary to the overall findings of this report.

SPECIES	COMMON NAME	GF Code	Estimated cover
Exotic Species			
Arctotheca calendula	Capeweed	G	4
Avena sp. (barbata?)	Oats	G	4
Bromus sp (catharticus?)	a Brome (Prairie Grass)	G	4
Cerastium sp.	a Chickweed	G	3
Cirsium vulgare	Spear Thistle	G	3
Conyza bonariensis	Fleabane	G	3
Echinochloa crus-galli	Barnyard Grass	G	3
Echium plantagineum	Paterson's Curse	G	3
Eragrostis curvula	African Lovegrass	G	4
Euphorbia peplus	Petty Spurge	G	3
Gallium aparine	Goosegrass/Bedstraw	G	2
Gamochaeta pupurea	Purple Cudweed	G	3
Hirschfeldia incana	Buchan Weed	G	3
Holcus lanatus	Yoskshire Fog	G	3
Hypochaeris sp.	Flatweed	G	3
Lactuca serriola	Prickly Lettuce	G	3
Lolium perenne	Perennial Ryegrass	G	3
Lysimachia arvensis	Scarlet Pimpernel	G	3
Malva neglecta	Dwarf Mallow	G	3

Modiola caroliniana	Red-flowered Mallow	G	3
Nassella trichotoma	Serrated Tussock	G	3
Onopordum (acaulon?)	Stemless Thistle	G	3
Panicum capillare	Withcgrass	G	3
Plantago lanceolata	Ribwort Plantain	G	4
Poa annua	Winter Grass	G	3
Romulea rosea	Onion Grass	G	3
Silene Gallica	French Catchfly	G	3
Taraxacum officionale	Dandelion	G	3
Trifolium arvense	Hare'sfoot Clover	G	4
Trifolium sp.	a Clover	G	4
Verbascum thapsus	Great Mullein	G	2
Total Exotic Species			***31 (31)***
Native Species			
Acacia baileyana	Cootamundra Wattle	S	3
Acacia melanoxylon	Blackwood	S	2
Austrostipa bigeniculata	Tall Speargrass	G	4
Austrostipa scabra	Corkscrew grass	G	4
Banksia integrifolia	Coast Banksia	S	1
Bothriochloa macra	Redgrass	G	3
Crassula siberiana	Stonecrop	G	3
Cynodon dactylon	Couch	G	4
Eucalyptus blakelyi	Blakely's Red Gum	T	3
Eucalyptus bridgesiana	Apple Box	T	3
Eucalyptus elata	River Peppermint	T	1
Eucalyptus longifolia	Woollybutt	T	2
Eucalyptus mannifera	Brittle Gum	T	3
Eucalyptus melliodora	Yellow Box	T	3
Eucalyptus polyanthemos	Red Box	T	3
Eucalyptus sideroxylon	Red Ironbark	T	1
Euchiton sphaericus	Common Cudweed	G	3
Geranium solanderi	Native Geranium	G	3
Microlaena stipoides	Microlaena	G	3
Oxalis (perennanse?)	Grassland Wood Sorrel	G	3
Panicum effusum	Hairy Panic	G	3
Poa sp. (sieberiana?)	Poa Tussock	G	3
Themeda australis	Kangaroo Grass	G	3
Vittadinia cuneata	Fuzzy New Holland Daisy	G	3
Total Native Species			***25 (14)***
Total All Species			***56 (45)***

APPENDIX C. Site Photos

Site Photo 1. Northwest corner of Area A, near existing driveway.

Site Photo 2. Boundary between native woodland of Area A (to right) and modified plantings of Area B next to buildings (to left).