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Yaaman Majeed
General Manager
Group One
45-51 Grimwade St Mitchell ACT 2911
T: 02 6241 1955
M: 0447 747 557
E: ymajeed@groupone.com.au

**Stage 1 Biodiversity Assessment Method assessment of 41 King St, Tarago, NSW
– Summary of methods and results
Capital Ecology project no. 3245**

Dear Yaaman Majeed,

Capital Ecology Pty Ltd is pleased to provide you with a summary of the methods and results of biodiversity surveys carried out in accordance with Stage 1 of the NSW Biodiversity Assessment Method¹ (BAM) for 41 King St, Tarago, NSW (Lot 3 DP1118635) (the 'subject land'). The subject land encompasses an area of 10.03 ha (refer Figure 1 and Figure 2).

The purpose of this Stage 1 BAM assessment is to determine the ecological values of the land that will be impacted by future development within the subject land, as well as the associated constraints posed by current Commonwealth and NSW legislation. The subject land is shown on a locality plan in Figure 1 and on aerial imagery in Figure 2.

Although general biodiversity values are identified and considered, the primary purpose of this report is to present a summary of the methods and results of Capital Ecology's application of the Stage 1 of the NSW Biodiversity Assessment Method (BAM) to identify and document the occurrence of biota listed as threatened under the NSW *Biodiversity Conservation Act 2016* (BC Act). This report also includes the results of our surveys completed to identify and document the occurrence of Matters of National Environmental Significance (MNES) listed pursuant to the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

¹ NSW Government (2020). *Biodiversity Assessment Method*. Department of Planning, Industry and Environment.

Capital Ecology Pty Ltd

PO Box 854
Gungahlin ACT 2912

ACN: 607 364 358
ABN: 50 607 364 358

Phone: 0412 474 415
Email: admin@capitalecology.com.au

www.capitalecology.com.au

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

This BAM Stage 1 assessment has been prepared by the following technical personnel:

- Robert Speirs – Director / Principal Ecologist
BAppSc (Ecology), DipPM, MEIANZ, CEnvP-E, Accredited BAM Assessor (No: BAAS17089)
Robert was project manager for this assessment and completed or closely supervised all field surveys, data entry, GIS mapping, and report preparation.
- Lucy Wenger – Ecologist
BSc (Hons)
Lucy undertook field surveys, GIS mapping, and report preparation.
- Shannon Thompson – Ecologist
BSc, MEIANZ
Shannon undertook field surveys.
- Jarmin Thornberry – Ecologist
BEnvSc&Mgt
Jarmin undertook field surveys.

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

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

1. Summary of survey methods and survey effort

Vegetation and potential flora/fauna habitat were surveyed and mapped in accordance with the BAM. This involved the following ecological surveys performed by Capital Ecology between 28 June 2023 and 14 November 2023.

- Plant Community Type and Vegetation Zone assessment and mapping.
- BAM plots.
- Threatened flora surveys via opportunistic observations.
- Threatened bird surveys via opportunistic observations.
- Targeted Striped Legless Lizard surveys.

1.1 Vegetation Survey and mapping methods

The vegetation throughout the entirety of the subject land was surveyed and mapped in accordance with the BAM. Vegetation survey dates and survey effort are detailed in Table 1. The methodology involved the following.

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

These steps are described in more detail below. The full BAM and supplementary resources are available online via the NSW Department of Planning and Environment (DPE) website <https://www.environment.nsw.gov.au/topics/animals-and-plants/biodiversity-offsets-scheme/accredited-assessors/biodiversity-assessment-method-2020>.

Table 1. Vegetation survey and mapping dates and survey effort.

Task	Method	Date	Personnel	Survey effort (total)
PCT and Zone mapping	Random meander	10/10/2023	1 person	2 hours
Vegetation assessment	Species inventory (opportunistic observations ²)	-	1-3 people	-
	BAM plot	14/11/2023	2 people	5 hours

1.1.1 Plant Community Type (PCT) mapping

The on-ground boundaries of each of the PCTs present in the subject land were mapped by marking boundaries directly onto high resolution orthorectified aerial photograph field maps. The PCTs and their characteristics are provided in the NSW Vegetation Information System (VIS) <https://www.environment.nsw.gov.au/research/Vegetationinformationsystem.htm>.

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

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

1.1.2 Vegetation zone definition and mapping

The mapped PCTs were further divided into vegetation zones based on the structure, floristic composition, and overall condition ('condition state') of the vegetation (see Table 2 for example of vegetation zones for PCT3376). The vegetation zones were mapped in the field and then digitised using GIS which provided accurate calculations of the total area of each vegetation zone in the subject land.

² During PCT and Zone mapping, BAM plots, Striped Legless Lizard surveys and habitat assessment.

1.1.3 Survey Plots/Transects

A series of a BAM plots (i.e. vegetation assessment survey plot/transect sets) were completed to adequately sample each vegetation zone. As illustrated in Diagram 8 of the BAM, each BAM Plot involved:

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

All BAM plot locations were selected randomly within the vegetation zone, by marking on a map and walking to the location. BAM plot locations were spread throughout the entire subject land (refer to Figure 3). The information collected during this process was subsequently used to determine the condition of the vegetation present in the subject land.

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

Table 2. Vegetation Zone classification for woodlands and forests: example shown for PCT3376 – *Southern Tableland Grassy Box Woodland*

PCT	Groundstorey Dominance (perennial) Native or Exotic	Mature characteristic canopy sp./spp. Present or Absent	Regeneration of characteristic canopy sp./spp. Present or Absent	Native Forb Diversity Low, Mod-High Low = < 12 sp. (disturbance tolerant spp. only) Mod-High = ≥12 sp.; incl. ≥ 1 important sp.; +/- disturbance sensitive spp.	Vegetation Zone ID
PCT3376 – <i>Southern Tableland Grassy Box Woodland</i>	Native	Present	Present	Mod-High	3376 Zone 1
			Present	Low	3376 Zone 2
			Absent	Mod-High	3376 Zone 3
			Absent	Low	3376 Zone 4
		Absent	Present	Mod-High	3376 Zone 5
			Present	Low	3376 Zone 6
			Absent	Mod-High	3376 Zone 7
			Absent	Low	3376 Zone 8
	Exotic	Present	Present	Low	3376 Zone 9
			Absent	Low	3376 Zone 10
		Absent	Present	Low	3376 Zone 11
			Absent	Low	3376 Zone 12

1.2 BAM targeted survey methods

A number of threatened flora and fauna species were identified by the BAM as potentially occurring in the subject land (referred to as 'species credit species'). Some of these species were excluded from further consideration based on factors such as habitat constraints, degraded habitat, geographical limitations, or the absence of required microhabitat features. Survey dates and survey effort for the remaining species credit species considered to have the potential to occur in the subject land are detailed in Table 3. Weather conditions for survey dates are detailed in Table 4. In total, the targeted survey effort for this assessment totalled 13.5 person-hours.

Table 3. BAM targeted survey dates and survey effort.

Task	Method	Date	Personnel	Survey effort
Habitat assessment	Random meander through likely habitat	10/10/2023	1 person	2 hours
Threatened Flora	Opportunistic observations ³	-	1-2 people	-
Threatened bird survey	Opportunistic observations ³	-	1-2 people	-
Striped Legless Lizard surveys	Tile placement	23/08/2023	2 people	4 hours
	8-week artificial cover survey program	19/09/2023	1 person	1 hour
		26/09/2023	2 people	1.5 hours
		3/10/2023	1 person	0.5 hours
		10/10/2023	1 person	1 hour
		18/10/2023	1 person	1 hour
		30/10/2023	1 person	0.75 hours
		7/11/2023	1 person	0.75 hours
		14/11/2023	2 people	1 hour
Tile collection and disposal	TBC	TBC	TBC	

Table 4. Survey weather conditions (Goulburn Airport, NSW).

Date	Temperature Min-Max	Wind @ 9am	Rain	Cloud (8 th)
28/06/2023	5.4 - 8.2 °C	15 km/h WNW	0.2 mm	8
23/08/2023	3.6 - 13.0 °C	17 km/h W	9 mm	6
19/09/2023	3.0 - 28.0 °C	35 km/h NW	0 mm	0
26/09/2023	5.4 - 22.4 °C	13 km/h NE	0 mm	6
3/10/2023	10.0 - 27.7 °C	39 km/h NW	0.2 mm	2
10/10/2023	3.5 - 22.2 °C	9 km/h NNW	0 mm	7
18/10/2023	3.9 - 19.2 °C	13 km/h ENE	0 mm	6
30/10/2023	1.5 - 29.0 °C	30 km/h N	0 mm	2
7/11/2023	3.7 - 27.0 °C	6 km/h NE	0 mm	0
14/11/2023	4.8 - 26.5 °C	2 km/h NNW	0 mm	2

³ During PCT and Zone mapping, BAM plots, Striped Legless Lizard surveys and habitat assessment.

Opportunistic observations of fauna and flora species in the study area were taken during the field surveys completed for this BAM Stage 1 summary report. An inventory of all flora species identified in the subject land are presented in Appendix A and all fauna species recorded in Appendix D. Maintaining an inventory in this manner ensures that the maximum possible diversity of species is recorded, and if present, any significant species are flagged.

1.2.1 Threatened flora survey

Based on the location and the ecological communities present, the subject land was assessed as having the potential to support EPBC Act and/or BC Act listed threatened flora species. Some threatened flora species are identified by the BAM as a species credit species, which is a species for which presence/absence and habitat value cannot be reliably predicted by location, vegetation type, and vegetation condition. Accordingly, targeted surveys are required to determine the species credit value of the subject land for these species.

Given the highly degraded condition of most of the subject land, targeted surveys were not undertaken. Instead, a thorough flora inventory was compiled for the subject land. Comprehensive flora inventories of species occurring at a site on the NSW Southern Tablelands cannot be compiled from a small number of surveys undertaken at any particular time. For example, many groundstorey flora species, notably the orchids, lilies, and peas, are only readily identifiable during their short and seasonally variable flowering period. As such, an inventory of all species identified in the subject land was commenced during the preliminary field inspection (28 June 2023) and supplemented across all of the subsequent surveys undertaken until the final field survey (14 November 2023). This inventory is presented in Appendix A. Maintaining an inventory in this manner ensures that the maximum possible diversity of species is recorded, and if present, any significant species (i.e. species credit species) are flagged. If detected, all significant species identified are recorded via a GPS waypoint and, if possible, the population size is counted or estimated.

1.2.2 Targeted bird survey

Based on the location and the ecological communities present, the subject land was assessed as having the potential to support EPBC Act and/or BC Act listed threatened bird species. Some threatened bird species are identified by the BAM as a species credit species. Accordingly, targeted surveys are required to determine the species credit value of the subject land for these species.

Given the lack of trees and shrubs across the majority of the subject land, and therefore suitable nesting or foraging habitat for all potential threatened bird species within the locality, targeted surveys were not undertaken. Instead, an inventory of all fauna species identified in the subject land was compiled across all of the surveys. This inventory is presented in Appendix D. Maintaining an inventory in this manner ensures that the maximum possible diversity of species is recorded, and if present, any significant species are flagged. If detected, all significant species identified are recorded via a GPS waypoint and, if possible, the population size is counted or estimated.

1.2.3 Striped Legless Lizard survey

Background

Based on the presence of appropriate vegetation structure (i.e. grassland with a defined, complex tussock structure), substantial portions of the subject land were considered potential habitat for Striped Legless Lizard. Striped Legless Lizard is a 'species credit species' flagged as a candidate species by the BAM for such PCTs within the Monaro IBRA Subregion. As such, a program of roof tile surveys was

undertaken for Striped Legless Lizard over the study area in accordance the NSW BAM survey guidelines for threatened reptiles⁴, as detailed below.

Methodology

As per the survey guidelines, tiles must be placed in grids of 50 (10 rows of 5) with 5 meters spacing. For sites containing between 2 ha and 30 ha of suitable habitat (i.e. PCT3338 Zone 8 and Zone 12), one tile grid is required per 3 ha of suitable habitat. Therefore, establishment of four grids (200 tiles in total) in the subject land, is deemed adequate under the NSW BAM survey guidelines for this species.

The location of each grid was chosen to spatially separate the grids as much as practicable to obtain an adequate coverage of the potential habitat in the subject land whilst still ensuring grids were placed in locations with appropriate Striped Legless Lizard habitat characteristics (i.e. defined tussock structure). The location of each corner of the grid was marked with a GPS (accurate +/- 3m) and each tile was assigned a unique number (refer to Appendix E).

Following a one month 'settling in' period, each tile was checked once per week for eight weeks. Surveys commenced on 19 September 2023, and were completed on 14 November 2023. All tiles were checked between 0800 hrs and 1330 hrs, with the exact timing of each check chosen to reflect the weather conditions. In this regard, checks were timed to occur when the tiles were warm to the touch, but not hot. Start time, finish time, and weather conditions were recorded for each check (Appendix E).

If captured, each Striped Legless Lizard had the following data recorded.

- Location (tile number).
- Snout-to-vent (SVL) length (mm).
- Total length (mm).
- Tail condition (Full/Regrowth).
- Other relevant biometrics (markings, colour, age, etc.).
- A macro photograph of the dorsal head scales. This photo was taken as the dorsal head scales of Striped Legless Lizard are unique to each individual and can therefore be used to determine the number of unique captures across the 8-week survey period.

Once processed, any captured Striped Legless Lizard were released beside the tile of capture, allowing it to move back beneath the tile or to a tussock adjacent to the tile. All other vertebrate fauna found under the tiles were visually identified to species level, where possible.

2. Summary of Survey Results

2.1 Subject Land Description

The subject land occupies approximately 10.03 ha on the western outskirts of Tarago township (Lot 3 DP1118635). It is bordered by similar rural lots to the north, south and west which are all characterised by cleared, thinned or regenerating vegetation.

⁴ NSW Government (2022b). *Threatened reptiles – Biodiversity Assessment Method survey guide*. NSW Department of Climate Change, Energy, the Environment, and Water.

Located in the Goulburn-Mulwaree Local Government Area (LGA), pursuant to the *Goulburn Mulwaree Local Environment Plan 2009* (LEP), the subject land is zoned 'RU2 Rural Landscape', with a minimum lot size of 'AD = 100 ha'.

The topography across the subject land is gently undulating, with elevation ranging from 705 m Australian Height Datum (AHD) in the north-east to 735 m AHD in the south-west.

Most of the subject land falls within the 'Lake George Complex' Mitchell Landscape, with a small section in the south-eastern corner within the 'Gundry Plains' Mitchell Landscape.

No areas of the subject land have been identified on the [NSW Biodiversity Values Map](#) as being of high biodiversity value.

2.2 Vegetation Surveys

2.2.1 Vegetation Description

The subject land has been substantially modified by its past land uses, which include the clearing of all woody vegetation, grazing and cultivation of some of the paddocks. As such, the majority of the subject land is characterised by a derived grassland/pasture with predominantly exotic grasses, agricultural weeds and low forb diversity.

The vegetation in the eastern paddocks, situated in the lower parts of the landscape, is overwhelmingly dominated by exotic pasture species and weeds. The composition varies between paddocks due to varying sowing history and disturbance, with dominant groundcover species including *Phalaris aquatica*, Cocksfoot *Dactylis glomerata*, Wild Oats *Avena spp.*, Brome Grass *Bromus spp.*, as well as high threat weeds Serrated Tussock *Nassella trichotoma*, African Lovegrass *Eragrostis curvula*, St John's Wort *Hypericum perforatum*, and Blackberry *Rubus fruticosus*. Disturbance-tolerant native grasses such as Speargrasses *Austrostipa bigeniculata* and *A. scabra*, and Wallaby Grasses *Rytidosperma spp.*, are scattered throughout these paddocks. Remnant and regenerating Snow Gums *Eucalyptus pauciflora* are present adjacent to these paddocks in neighbouring lots.

Small patches containing a higher proportion of native groundcover are located further up slope. Although historically cleared and intensively grazed, these patches have not been pasture improved, and as such are dominated by annual grasses (primarily Rat's-tail Fescue *Vulpia spp.*) with a low diversity of perennial native grasses, including Wallaby Grasses, Corkscrew Speargrass *Austrostipa scabra*, and Kangaroo Grass *Themeda triandra*. The low forb diversity includes Woolly New Holland Daisy *Vittadinia gracilis*, Australian Bindweed *Convolvulus angustissimus* and Wattle Mat-Rush *Lomandra filiformis*, along with a moderate cover of common agricultural and high threat weeds.

The south-western corner of the subject land occurs in a higher part of the landscape, characterised by shallow, poor, rocky soils. This area has not been disturbed to the same extent as the remainder of the subject land. Although it lacks overstorey canopy trees due to historical clearing, natural regeneration is occurring, with several young Brittle Gum *Eucalypts mannifera* and Black She-Oak *Allocasuarina littoralis* present. Scribbly Gums *E. rossii* and Broad-leafed Peppermint *E. dives* are present just outside the subject land in neighbouring lots. The shrub layer includes scattered Green Wattle *Acacia decurrens*, Daphne Heath *Brachyloma daphnoides*, Hoary Guinea Flower *Hibbertia obtusifolia*, Narrow-leaved Geebung *Persoonia linearis* and Urn Heath *Melichrus urceolatus*. The ground layer includes a moderate to high diversity of native grasses and forbs, such as Shorthair Plumegrass *Dichelachne micrantha*, Purple Wiregrass *Aristida ramosa*, Foxtail Speargrass *Austrostipa densiflora*, Ivy Goodenia *Goodenia hederacea*, Poverty Raspwort *Gonocarpus tetragynus* and Wattle Mat-rush.

2.2.2 Plant Community Type (PCT) mapping

Based on the landscape position, geology, and the presence of mature and regenerating eucalypts in adjacent lots (e.g. Snow Gum, Brittle Gum and Broad-leafed Peppermint), the subject land was determined to support two PCTs (Table 5). The PCTs and their characteristics are available via the NSW Bionet Vegetation Classification Database ([BioNet Vegetation Classification \(nsw.gov.au\)](https://www.bionet.nsw.gov.au/)).

Table 5. PCTs recorded in the subject land.

PCT	PCT name	PCT description	Occurrence in subject land	TEC status Commonwealth / NSW	PCT % cleared
3338	Goulburn Tableland Frost Hollow Grassy Woodland	A mid-high to tall sclerophyll grassy woodland to open forest found on gentle lower slopes and broad valley floors of undulating tableland landscapes in north-east parts of the southern tablelands. This PCT occurs at elevations of 600-950 metres asl. In its climax form this community would have been characterised by sparse to mid-dense tree canopy dominated by <i>Eucalyptus pauciflora</i> and occasionally <i>Eucalyptus rubida</i> . The shrub layer is often sparse or absent, and commonly includes subshrubs <i>Pimelea curviflora</i> and <i>Bossiaea prostrata</i> . The ground layer is characteristically grassy, almost always dominated by <i>Themeda triandra</i> , frequently with <i>Microlaena stipoides</i> , <i>Poa sieberiana</i> and a diverse suite of native forbs.	This PCT was mapped in the lower parts of the landscape in the subject land.	Critically Endangered (NSW BC Act) Werriwa Tableland Cool Temperate Grassy Woodland (Werriwa CTGW) TEC where a patch meets condition thresholds as per the <i>Monaro and Werriwa CTGW Assessment Spreadsheet Tool</i> ⁵ .	96.4%
3744	Palerang Hills Peppermint Dry Shrub Forest	This community is characterised by a mid-high to tall dry sclerophyll open forest. It occurs on shallow sandy soils on rolling low hills of the Southern Tablelands, at elevations of generally 600-910 metres asl. The sparse to mid-dense tree canopy very frequently includes <i>Eucalyptus dives</i> and/or <i>Eucalyptus mannifera</i> , occasionally with <i>Eucalyptus rossii</i> . An occasional sparse small tree layer includes <i>Allocasuarina littoralis</i> , and a sparse to patchy shrub layer frequently includes scattered <i>Brachyloma daphnoides</i> , commonly with <i>Hibbertia obtusifolia</i> , <i>Persoonia linearis</i> and <i>Melichrus urceolatus</i> . A sparse to mid-dense ground layer includes a mix of hardy tableland grasses, graminoids and forbs, such as <i>Goodenia hederacea</i> , <i>Microlaena stipoides</i> , <i>Gonocarpus tetragynus</i> and <i>Lomandra filiformis</i> .	This PCT was mapped in the higher parts of the landscape, in the south-western corner of the subject land.	Not a TEC.	70.8%

⁵ NSW Government (2019). *Monaro and Werriwa CTGW Assessment Spreadsheet Tool*. NSW Department of Climate Change, Energy, the Environment, and Water.

2.2.3 Vegetation Zones

As shown in Table 6 and Figure 3, the subject land supports two PCTs that were classified into a total of three vegetation zones.

The characteristics of the vegetation zones are defined as follows.

PCT3338 – Goulburn Tableland Frost Hollow Grassy Woodland

- Zone 8 – No Canopy – Native Dominant – Low Diversity.
- Zone 12 – No Canopy – Exotic Dominant – Low Diversity.

PCT3744 – Palerang Hills Peppermint Dry Shrub Forest

- Zone 5 – No Canopy – Regeneration – Native Dominant – Mod to High Diversity.

A total of 5 BAM plots were surveyed across the three vegetation zones. The locations of the plots are shown in Figure 3 and the results are summarised in Tables 7 to 9. A summary of plot results and a list of the total flora species recorded are provided in Appendix A and Appendix B.

Table 6. PCT 3338 and PCT 3744 Vegetation zone details

	PCT 3338		PCT 3744
	Zone 8	Zone 12	Zone 5
Native Canopy	No	No	No
Native Midstorey	No	No	Yes
Groundstorey Dominance	Native	Exotic	Native
Native Understorey Diversity	Low	Low	Moderate to High
Area in the subject land	0.72 ha	8.44 ha	0.13 ha
BAM plots assessed in the subject land	1	3	1
BC Act Native Vegetation	Yes	No	Yes
EPBC Act TEC	No	No	No
BC Act TEC	No	No	No

Table 7. PCT3338 Zone 8 results summary

PCT3338 Zone 8	
Description	<p><u>Goulburn Tableland Frost Hollow Grassy Woodland – No Canopy – Native Dominant – Low Diversity</u></p> <p>Zone 8 occurs in small patches across the higher portions of PCT3338. Although historically cleared and grazed, it has not been pasture improved, and as such is dominated by annual grasses (primarily Rat’s-tail Fescue) with a low diversity of perennial native grasses, including Wallaby Grasses, Corkscrew Speargrass and Kangaroo Grass. The low forb diversity includes Woolly New Holland Daisy, Australian Bindweed and Wattle Mat-Rush, along with a moderate cover of common agricultural and high threat weeds.</p>
Area	0.72 ha (1 BAM plot)
Overstorey Species	None
Overstorey Regeneration	No
Perennial Groundlayer	82% native
Understorey Species	11 recorded native species, 6 native non-grass species
Exotic species	15 exotic species. Important weeds include St John’s Wort, African Lovegrass, Sheep’s Sorrel <i>Rumex acetosella</i> , <i>Paspalum dilatatum</i> and Serrated Tussock.
EPBC Act and/or BC Act listed TEC	No
BC Act Native Vegetation	Yes



Table 8. PCT3338 Zone 12 results summary

	PCT3338 Zone 12
Description	<p><u>Goulburn Tableland Frost Hollow Grassy Woodland – No Canopy – Exotic Dominant – Low Diversity</u></p> <p>Zone 12 is present across most of the subject land and has been historically cleared and pasture improved. The vegetation is dominated by exotic pasture species, high threat weeds and other common agricultural weeds. The composition varies between paddocks due to varying sowing history, with dominant species including Phalaris, Cocksfoot, Serrated Tussock, African Lovegrass, St John’s Wort, Wild Oats and Brome.</p> <p>Zone 12 contains a low cover and diversity of disturbance tolerant native grasses and forbs such as Speargrasses, Wallaby Grasses. and Wattle Mat-Rush.</p>
Area	8.44 ha (3 BAM plots)
Overstorey Species	None
Overstorey Regeneration	No
Perennial Groundlayer	0-32 % native
Understorey Species	2-7 recorded native species, 1-3 native non-grass species
Exotic species	9-16 exotic species. Important weeds include Serrated Tussock, Sheep’s Sorrel, African Lovegrass, St John’s Wort, Blackberry and Briar Rose.
EPBC Act and/or BC Act listed TEC	No
BC Act Native Vegetation	No



Table 8. PCT3744 Zone 5 results summary

PCT3744 Zone 5	
Description	<p><u>Palerang Hills Peppermint Dry Shrub Forest – No Canopy – Regeneration – Native Dominant – Mod to High Diversity.</u></p> <p>This patch occurs on shallow, poor rocky soils where pasture improvement has not established to the extent that it has in the remainder of the subject land. This zone is lacking overstorey canopy trees due to historical clearing, but natural regeneration is occurring, with several young Brittle Gum and Black She-Oak present. The shrub layer includes scattered Green Wattle, Daphne Heath, Hoary Guinea Flower, Narrow-leaved Geebung and Urn Heath. The ground layer includes a moderate to high diversity of native grasses and forbs, such as Shorthair Plumegrass, Purple Wiregrass, Foxtail Speargrass, Ivy Goodenia, Poverty Raspwort and Wattle Mat-rush.</p> <p>This zone also contains a low cover of common agricultural weeds.</p>
Area	0.13 ha (1 BAM plots)
Overstorey Species	None
Overstorey Regeneration	Yes – Brittle Gum and Black She-Oak
Perennial Groundlayer	85% native
Understorey Species	14 recorded native species, 12 native non-grass species
Exotic species	18 exotic species. Important weeds include St John’s Wort, Sheep’s Sorrel, Blackberry, Serrated Tussock and African Lovegrass.
EPBC Act and/or BC Act listed TEC	No
BC Act Native Vegetation	Yes



2.2.4 BC Act Native Vegetation

PCT3338 Zone 8 and PCT 3744 Zone 5 are both dominated by native groundcover species and clearly meet the definition of BC Act 'native vegetation' (refer to Figure 4).

PCT3376 Zone 12 does not meet the definition of BC Act native vegetation, as this zone is characterised by a perennial groundstorey that contains less than 35% native cover and does not contain a cover of native trees and/or shrubs.

As shown in Figure 4, the subject land supports a total of 0.84 ha of BC Act native vegetation.

2.2.5 Threatened Ecological Communities

The Critically Endangered BC Act '*Werriwa Tablelands Cool Temperate Grassy Woodland*' (Werriwa CTGW) has the potential to occur in the areas mapped as PCT3338. However, neither PCT 3338 Zone 8 or Zone 12 meet the vegetation composition, floristic diversity and/or proximity to existing Snow Gum patches required to meet the listing criteria for Werriwa CTGW^{6,7}.

2.2.6 Vegetation Integrity Scores

Zones which support any amount of 'native vegetation', regardless of how small, and which occur in the subject land are used to determine vegetation integrity (VI) scores. Zones which do not support **any** native vegetation do not require further assessment in the BAM except where:

- (a) they are proposed for restoration as part of a biodiversity stewardship site; or
- (b) they are assessed as habitat for threatened species.

While PCT3338 Zone 12 does not meet the definition of BC Act 'native vegetation' (see Section 2.4), patches do support a small native component (Appendix B). Table 10 therefore summarises the results of the BAM plot assessments and details the composition, structure, function, and resulting vegetation integrity score for all vegetation zones. The detailed results are presented in Appendix C.

⁶ NSW Threatened Species Scientific Committee (2019). Notice of and reasons for the Final Determination. Available at: <https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Scientific-Committee/Determinations/2019/monaro-tableland-final-determination-CEEC.pdf?la=en&hash=08778611BB71929B4B80EAE429060ABA50664030>

⁷ NSW Department of Climate Change, Energy, the Environment, And Water (2019). *Field assessment guidelines for Monaro and Werriwa Cool Temperate Grassy Woodland critically endangered ecological communities*. Available at: <https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Threatened-species/monaro-and-werriwa-field-assessment-guidelines-190714.pdf>

Table 10. Vegetation integrity scores – PCT3338 and PCT3744

	PCT 3338		PCT 3744
	Zone 8	Zone 12	Zone 5
Area in the subject land	0.72	8.44	0.13
BAM plots assessed in the subject land	1	3	1
Composition condition score	33.7	15	54.8
Structure condition score	24.6	1.2	31.8
Function condition score	0	0.1	2.2
Current vegetation integrity score	2.9	1.2	15.8

2.3 BAM targeted survey results

Targeted surveys were completed to confirm the occurrence and/or habitat potential for BC Act species credit species flagged by the BAM as having the potential to occur in the PCT of the subject land, as well as for additional species listed only under the EPBC Act.

2.3.1 Threatened Flora

A program of threatened flora surveys was conducted via opportunistic observations across the subject land. A total of 63 flora species were recorded during the surveys, comprising 30 native species and 33 exotic species (Appendix A).

None of the threatened flora species credit species considered to have the potential to occur were recorded in the subject land. Given this finding, together with the highly modified condition of the groundstorey across most of the subject land, no threatened flora species are considered likely to occur within the subject land.

2.3.2 Threatened Fauna

A total of 24 fauna species were recorded during field surveys, comprising 14 native and 1 exotic bird species, 2 native and 1 exotic mammal species, and 5 native reptile species (Appendix D). This included the Little Whip Snake *Suta flagellum* (BC Act vulnerable). As described below, no other EPBC Act and/or BC Act listed threatened fauna species were recorded during the surveys.

The Striped Legless Lizard was not detected during the eight-week program of tile surveys, despite being undertaken in ideal conditions (Appendix E). A large number of other common herpetofauna were recorded underneath the tiles, including the Little Whip Snake, which has not previously been recorded in the locality.

Due to the lack of trees and shrubs across the majority of the subject land, there is very little to no suitable foraging or nesting habitat available to the threatened bird species known to occur in the locality. It is possible that several threatened woodland bird species may occasionally forage or travel through the subject land, namely Dusky Woodswallow *Artamus cyanopterus cyanopterus*, Diamond Firetail *Stagonopleura guttata*, Flame Robin *Petroica phoenicea*, Gang-gang Cockatoo *Callocephalon fimbriatum*, Glossy Black-Cockatoo *Calyptorhynchus lathami*, Scarlet Robin *Petroica boodang* and White-fronted Chat *Epthianura albifrons*.

Summary

In summary, the subject land supports the following significant biodiversity values.

- 0.84 ha of BC Act native vegetation.
- 9.16 ha of potential habitat for the Little Whip Snake.
- Potential marginal foraging habitat for threatened woodland birds.

With consideration of the land use history of the subject land and the resulting highly degraded current condition of the vegetation and other ecological values present within, it is our view that development of the subject land is a reasonable proposition.

With reference to the Concept Layout & Master Plan created by Place Logic⁸, it is likely that subdivision and clearing of the subject land (the 'proposed development') will have very little impact on any threatened species, threatened ecological communities or their habitats. As such, the biodiversity values within the subject land will pose a low degree of constraint to the proposed development.

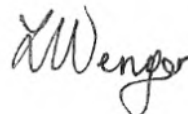
Due to the proposed rezoning of the subject land from RU2 to RU5 and the associated change of minimum lot size from 100 ha to less than 1 ha, the proposed development will trigger the NSW Biodiversity Offsets Scheme (BOS) and require the preparation of a Biodiversity Development Assessment Report (BDAR) as it will involve clearance of BC Act native vegetation over the applicable 0.25 ha clearing threshold as set out in the *Biodiversity Conservation Regulation 2017*. However, it is likely that this BDAR will be relatively simple and result in little to no offset credit liability.

We trust that this report provides the information required. If you have any questions regarding the information we have provided, please do not hesitate to contact us.

Yours sincerely,



Robert Speirs
Director / Principal Ecologist
Accredited BAM Assessor (No: BAAS17089)



Lucy Wenger
Ecologist

Figures

Figure 1. Locality Plan

Figure 2. Subject Land on Current Aerial Imagery

Figure 3. Vegetation Mapping Results

Figure 4. BC Act Native Vegetation and Threatened Ecological Communities

Figure 5. Striped Legless Lizard Survey

⁸ Place Logic (2023). *41 King Street Tarago Concept Layout & Master Plan*. Prepared by Place Logic for Group One. July 2023.

Appendices

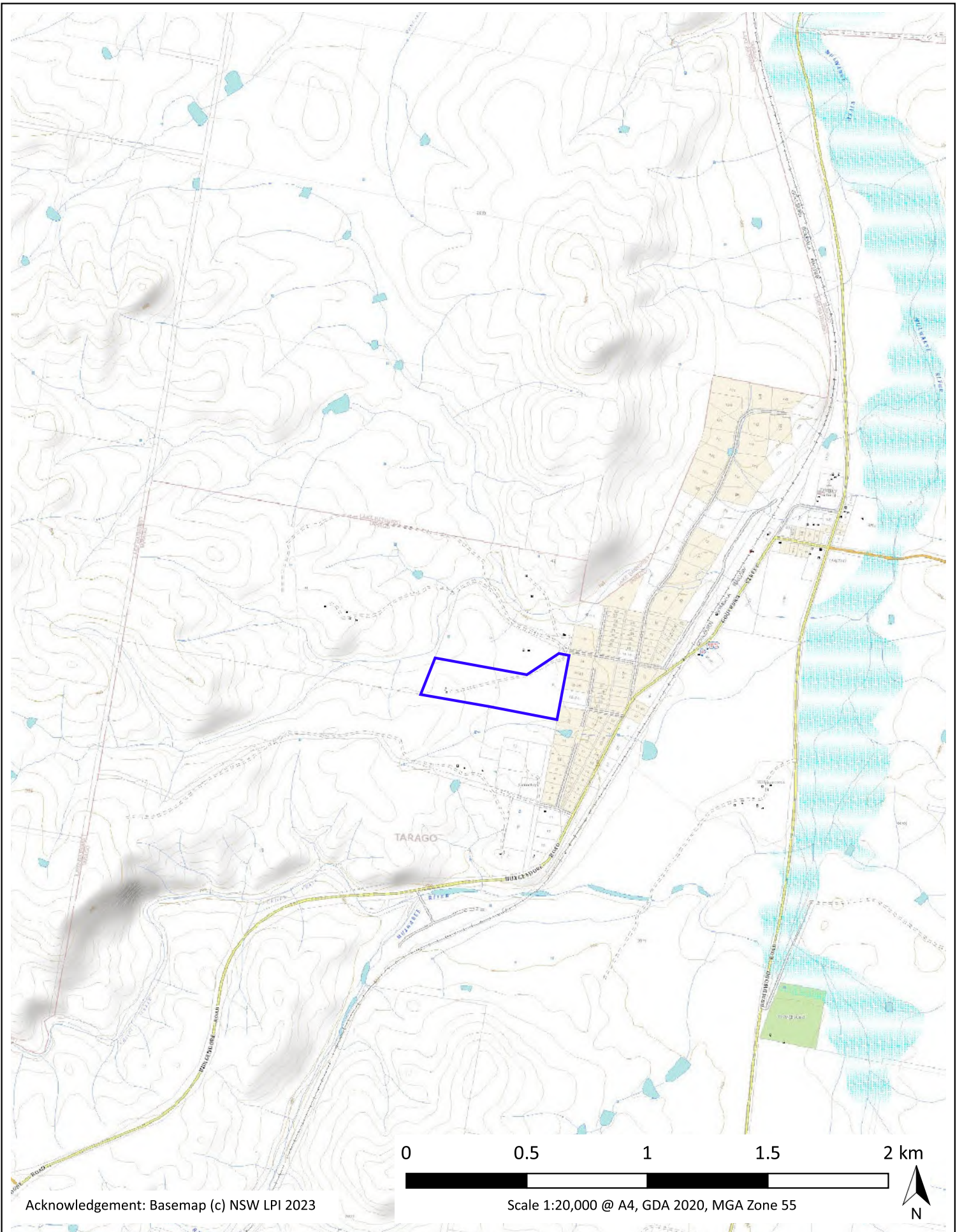
Appendix A. Recorded Flora

Appendix B. Flora Species Recorded by Plot and Percent Cover

Appendix C. BAM Plot/Transect Scores

Appendix D. Recorded Fauna

Appendix E. Striped Legless Lizard Survey Results



Acknowledgement: Basemap (c) NSW LPI 2023

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

Figure 1. Locality Plan

Capital Ecology Project No: 3245
 Drawn by: L. Wenger
 Date: 9 February 2024

Legend


 Subject Land





Figure 2. The Subject Land on Recent Aerial Imagery



Figure 3. Vegetation Assessment - PCTs and Zones

Capital Ecology Project No: 3245
 Drawn by: L. Wenger
 Date: 9 February 2024



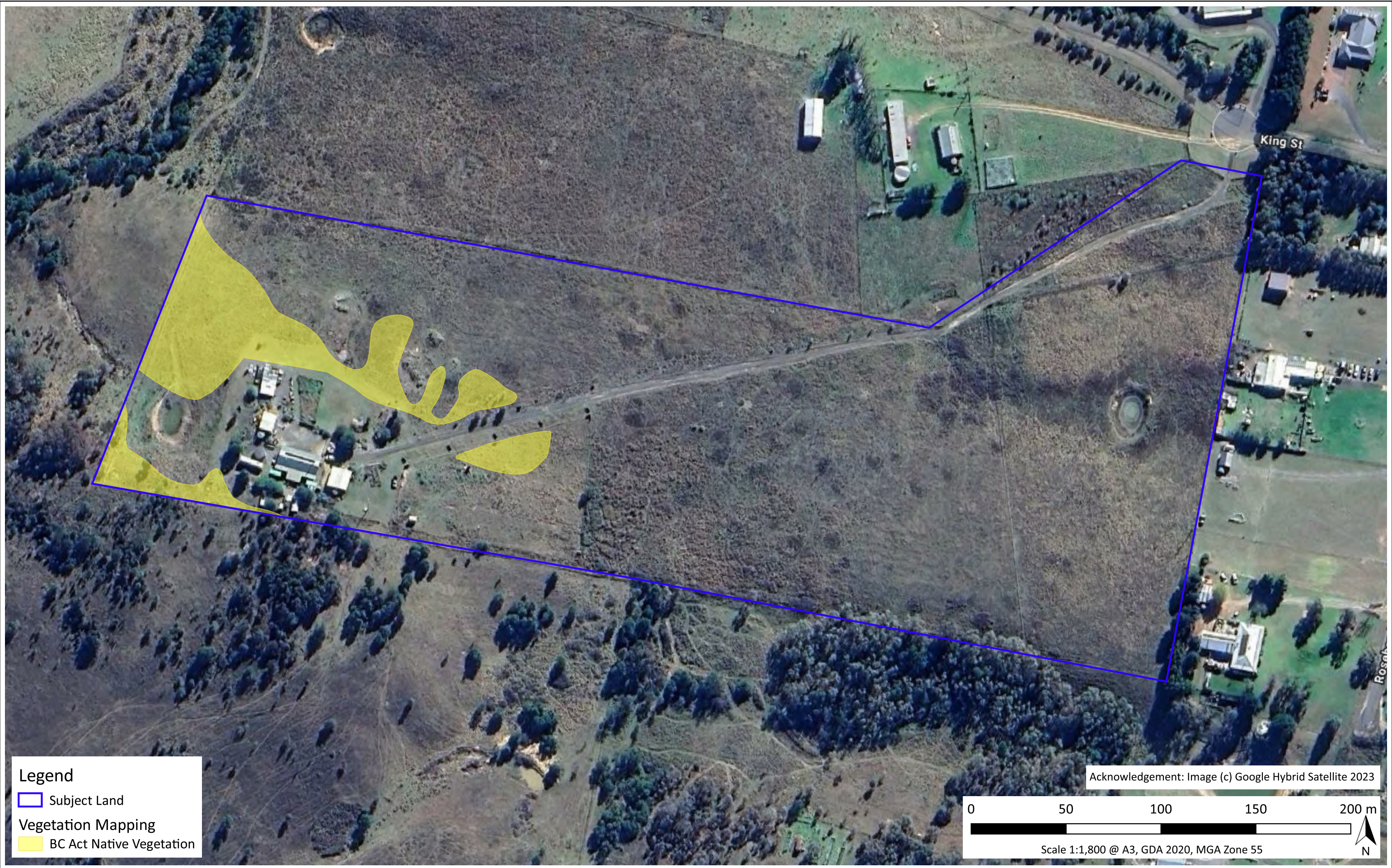


Figure 4. BC Act Native Vegetation

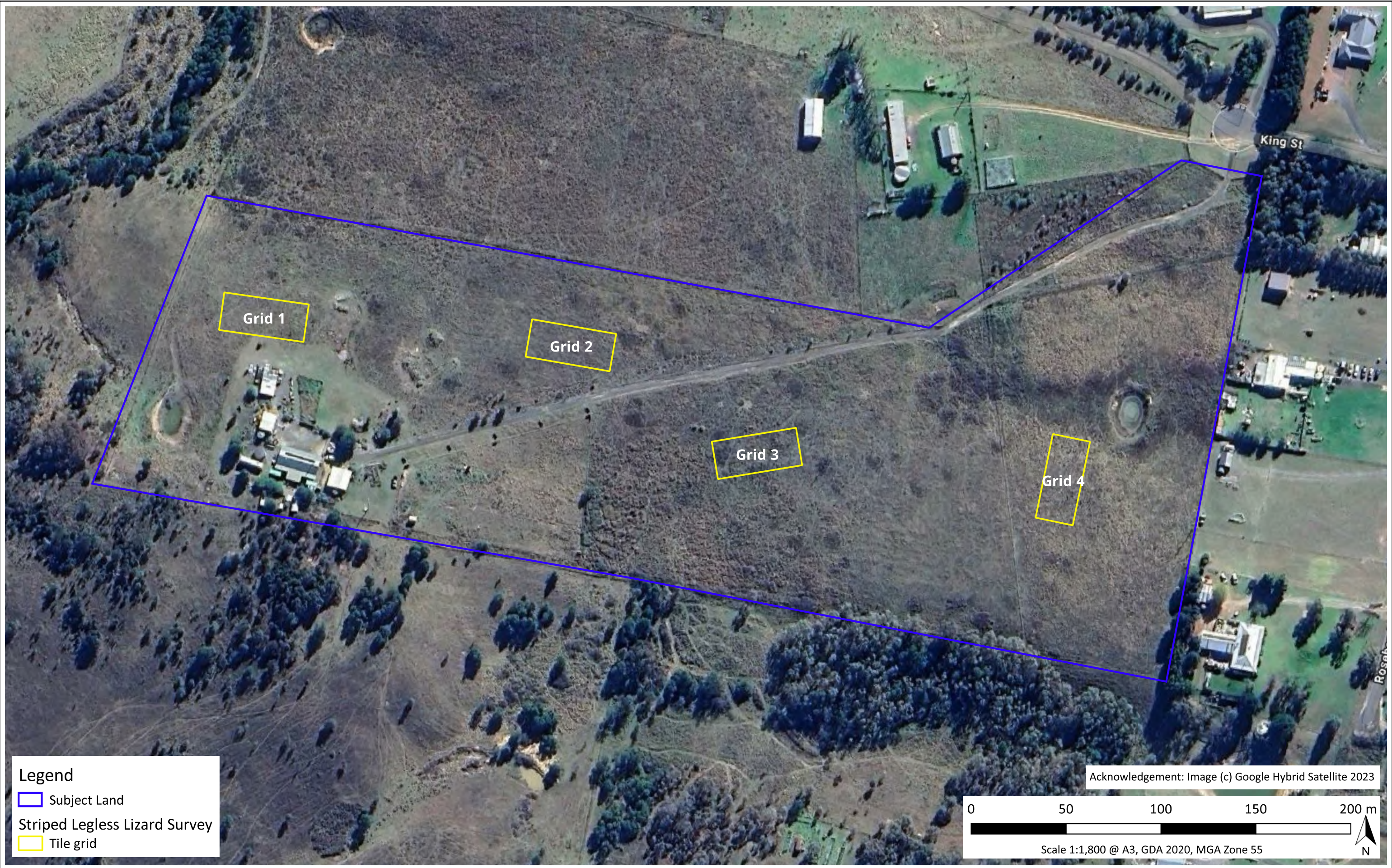


Figure 5. Striped Legless Lizard Survey

Appendix A. Recorded Flora

Scientific Name	Common Name
Exotic	
<i>Avena barbata</i>	Bearded Oats
<i>Avena sp.</i>	Oats
<i>Briza maxima</i>	Quaking Grass
<i>Briza minor</i>	Shivery Grass
<i>Bromus catharticus</i>	Prairie Grass
<i>Bromus hordeaceus</i>	Soft Brome
<i>Centaureum erythraea</i>	Common Centaury
<i>Cirsium vulgare</i>	Spear Thistle
<i>Conyza bonariensis</i>	Flaxleaf Fleabane
<i>Conyza sp.</i>	Fleabane
<i>Dactylis glomerata</i>	Cocksfoot
<i>Echium plantagineum</i>	Patterson's Curse
<i>Eragrostis curvula</i>	African Lovegrass
<i>Hirschfeldia incana</i>	Buchan Weed
<i>Holcus lanatus</i>	Yorkshire Fog
<i>Hypericum perforatum</i>	St. Johns Wort
<i>Hypochaeris radicata</i>	Catsear
<i>Lolium rigidum</i>	Wimmera Ryegrass
<i>Lysimachia arvensis</i>	Scarlet Pimpernel
<i>Nassella trichotoma</i>	Serrated Tussock
<i>Paronychia brasiliana</i>	Chilean Whitlow Wort, Brazilian Whitlow
<i>Paspalum dilatatum</i>	Paspalum
<i>Petrorhagia nanteuillii</i>	Proliferous Pink
<i>Phalaris aquatica</i>	Phalaris
<i>Plantago lanceolata</i>	Lamb's Tongues
<i>Prunus sp.</i>	Plum
<i>Rosa rubiginosa</i>	Sweet Briar
<i>Rubus fruticosus</i>	Blackberry
<i>Rumex acetosella</i>	Sheep Sorrel
<i>Solanum sp.</i>	Nightshade
<i>Sonchus asper</i>	Prickly Sowthistle
<i>Trifolium spp.</i>	Clover
<i>Vulpia sp.</i>	Rat's-tail Fescue
Native	
<i>Acacia decurrens</i>	Green Wattle
<i>Allocasuarina littoralis</i>	Black She-Oak
<i>Aristida ramosa</i>	Purple Wiregrass
<i>Austrostipa bigeniculata</i>	Yanganbil
<i>Austrostipa densiflora</i>	Foxtail Speargrass
<i>Austrostipa scabra</i>	Speargrass
<i>Brachyloma daphnoides</i>	Daphne Heath
<i>Cassinia sifton</i>	Sifton Bush
<i>Cheilanthes sieberi</i>	Rock Fern
<i>Convolvulus angustissimus</i>	Australian Bindweed

Scientific Name	Common Name
<i>Dichelachne micrantha</i>	Shorthair Plumegrass
<i>Eucalyptus mannifera</i>	Brittle Gum
<i>Gonocarpus tetragynus</i>	Poverty Raspwort
<i>Goodenia hederacea</i>	Ivy Goodenia
<i>Hackelia suaveolens</i>	Sweet hound's-tongue
<i>Hardenbergia violacea</i>	False Sarsaparilla
<i>Hibbertia obtusifolia</i>	Hoary Guinea Flower
<i>Juncus spp.</i>	Juncus
<i>Lomandra filiformis subsp. coriacea</i>	Wattle Matt-rush
<i>Lomandra filiformis subsp. filiformis</i>	Wattle Matt-rush
<i>Melichrus urceolatus</i>	Urn Heath
<i>Microlaena stipoides</i>	Weeping Grass
<i>Persoonia linearis</i>	Narrow-leaved Geebung
<i>Pseudognaphalium luteoalbum</i>	Jersey Cudweed
<i>Rytidosperma carphoides</i>	Short Wallaby Grass
<i>Rytidosperma spp.</i>	Wallaby Grass
<i>Schoenus apogon</i>	Fluke Bogrush
<i>Themeda triandra</i>	Kangaroo Grass
<i>Vittadinia gracilis</i>	Woolly New Holland Daisy
<i>Wahlenbergia spp.</i>	Bluebell
Number of Species	63
Number of Native Species	30
Number of Exotic Species	33

Appendix B. Flora Species Recorded by Plot and Percent Cover

Species List	Common Name	3338.8.1	3338.12.1	3338.12.2	3338.12.3	3744.5.1
Exotic						
<i>Avena barbata</i>	Bearded Oats	-	5	-	-	0.2
<i>Avena sp.</i>	Oats	-	-	-	-	0.2
<i>Briza maxima</i>	Quaking Grass	0.1	0.1	-	-	0.2
<i>Briza minor</i>	Shivery Grass	-	-	-	-	0.2
<i>Bromus cartharticus</i>	Prairie Grass	-	-	-	3	-
<i>Bromus hordeaceus</i>	Soft Brome	1	10	1	3	0.2
<i>Centaurium erythraea</i>	Common Centaury	-	-	-	-	0.1
<i>Cirsium vulgare</i>	Spear Thistle	-	-	0.1	0.1	-
<i>Conyza bonariensis</i>	Flaxleaf Fleabane	-	-	-	-	0.1
<i>Conyza sp.</i>	Fleabane	0.1	-	-	-	-
<i>Dactylis glomerata</i>	Cocksfoot	-	-	20	1	-
<i>Echium plantagineum</i>	Patterson's Curse	0.1	-	-	0.2	-
<i>Eragrostis curvula</i>	African Lovegrass	3	10	-	-	5
<i>Hirschfeldia incana</i>	Buchan Weed	-	-	0.1	-	-
<i>Holcus lanatus</i>	Yorkshire Fog	0.1	-	5	0.3	-
<i>Hypericum perforatum</i>	St. Johns Wort	0.1	3	10	6	1
<i>Hypochaeris radicata</i>	Catsear	0.1	5	1	3	0.1
<i>Lolium rigidum</i>	Wimmera Ryegrass	-	-	0.1	-	-
<i>Lysimachia arvensis</i>	Scarlet Pimpernel	-	-	0.1	-	-
<i>Nassella trichotoma</i>	Serrated Tussock	1	4	30	68	4
<i>Paronychia brasiliiana</i>	Chilean Whitlow Wort	0.1	-	-	-	0.1
<i>Paspalum dilatatum</i>	Paspalum	0.1	-	-	-	-
<i>Petrorhagia nanteuilii</i>	Proliferous Pink	0.1	-	-	-	0.1
<i>Phalaris aquatica</i>	Phalaris	-	-	20	-	0.1
<i>Plantago lanceolata</i>	Lamb's Tongues	-	-	0.1	-	-
<i>Prunus sp.</i>	Plum	-	-	-	0.1	-

Species List	Common Name	3338.8.1	3338.12.1	3338.12.2	3338.12.3	3744.5.1
<i>Rosa rubiginosa</i>	Sweet Briar	-	-	-	0.1	-
<i>Rubus fruticosus</i>	Blackberry	-	-	1	4	0.3
<i>Rumex acetosella</i>	Sheep Sorrel	0.5	2	0.5	10	0.1
<i>Solanum sp.</i>	Nightshade	-	-	-	-	0.1
<i>Sonchus asper</i>	Prickly Sowthistle	-	-	0.1	-	-
<i>Trifolium spp.</i>	Clover	0.1	-	-	-	-
<i>Vulpia sp.</i>	Rat's-tail Fescue	60	45	3	-	0.1
Native						
<i>Acacia decurrens</i>	Green Wattle	-	-	-	-	4
<i>Allocasuarina littoralis</i>	Black She-Oak	-	-	-	-	0.1
<i>Aristida ramosa</i>	Purple Wiregrass	1	-	-	-	10
<i>Austrostipa bigeniculata</i>	Yanganbil	-	0.2	5	0.1	0.2
<i>Austrostipa densiflora</i>	Foxtail Speargrass	-	0.5	-	-	25
<i>Austrostipa scabra</i>	Corkskrew Speargrass	2	2	-	-	-
<i>Brachyloma daphnoides</i>	Daphne Heath	-	-	-	-	0.5
<i>Cassinia sifton</i>	Sifton Bush	0.1	-	-	-	0.1
<i>Convolvulus angustissimus</i>	Australian Bindweed	0.1	0.1	0.1	0.1	-
<i>Dichelachne micrantha</i>	Shorthair Plumegrass	-	-	-	-	0.1
<i>Eucalyptus mannifera</i>	Brittle Gum	-	-	-	-	0.1
<i>Gonocarpus tetragynus</i>	Poverty Raspwort	-	-	-	-	0.3
<i>Goodenia hederacea</i>	Ivy Goodenia	-	-	-	-	2
<i>Hackelia suaveolens</i>	Sweet hound's-tongue	-	-	0.1	-	-
<i>Hardenbergia violacea</i>	False Sarsaparilla	-	-	-	-	0.1
<i>Hibbertia obtusifolia</i>	Hoary Guinea Flower	0.1	-	-	-	0.1
<i>Juncus spp.</i>	Juncus	0.1	-	-	-	-
<i>Lomandra filiformis subsp. coriacea</i>	Wattle Matt-rush	0.5	-	-	-	0.3
<i>Lomandra filiformis subsp. filiformis</i>	Wattle Matt-rush	-	0.1	-	-	8
<i>Melichrus urceolatus</i>	Urn Heath	-	-	-	-	0.1
<i>Microlaena stipoides</i>	Weeping Grass	1	-	0.1	-	-

Species List	Common Name	3338.8.1	3338.12.1	3338.12.2	3338.12.3	3744.5.1
<i>Persoonia linearis</i>	Narrow-leaved Geebung	-	-	-	-	0.1
<i>Pseudognaphalium luteoalbum</i>	Jersey Cudweed	0.1	-	-	-	0.1
<i>Rytidosperma carphoides</i>	Short Wallaby Grass	3	-	-	-	1
<i>Rytidosperma spp.</i>	Wallaby Grass	10	3	0.1	-	15
<i>Schoenus apogon</i>	Fluke Bogrush	-	-	0.1	-	0.1
<i>Themeda triandra</i>	Kangaroo Grass	6	8	0.1	-	-
<i>Vittadinia gracilis</i>	Woolly New Holland Daisy	0.1	-	-	-	-
<i>Wahlenbergia spp.</i>	Bluebell	-	-	-	-	0.1
Number of Species		28	16	23	15	40
Number of Native Species		13	7	7	2	22
Number of Exotic Species		15	9	16	13	18
No. Native Non-grass Species		6	2	3	1	12
% Perennial Native Ground Cover		82	32	6	<1	85

Appendix C. BAM Plot/Transect Scores

Composition Score

PCT code	Veg. Zone	Plot No.	Composition (species richness)					
			Tree	Shrub	Grass & grass like	Forb	Fern	Other
3338	8	1	0	2	8	2	0	1
	12	1	0	0	6	0	0	1
		2	0	0	5	1	0	1
		3	0	0	1	0	0	1
3744	5	1	3	5	9	4	0	1

Structure Score

PCT code	Veg. Zone	Plot No.	Structure (% cover)					
			Tree	Shrub	Grass & grass like	Forb	Fern	Other
3338	8	1	0	0.2	23.6	0.2	0	0.1
	12	1	0	0	13.8	0	0	0.1
		2	0	0	5.4	0.1	0	0.1
		3	0	0	0.1	0	0	0.1
3744	5	1	4.2	0.9	59.7	2.5	0	0.1

Function Score

PCT code	Veg. Zone	Plot No.	Function									
			Eucalyptus stem classes					No. of large trees	Hollow bearing trees	% Litter cover	Coarse woody debris (m)	% High threat weed cover
			Regen.	5-9	10-19	20-29	30-49					
3338	8	1	0	0	0	0	0	0	0	2.2	0	4.7
	12	1	0	0	0	0	0	0	0	3.8	0	19
		2	0	0	0	0	0	0	0	2.2	0	41.5
		3	0	0	0	0	0	0	0	5	0	88.1
3744	5	1	0	1	0	0	0	0	0	4.4	0	10.4

Appendix D. Recorded Fauna

Scientific Name	Common Name	Classification	Native / Exotic	Status
<i>Carduelis carduelis</i>	European Goldfinch	Aves	Exotic	-
<i>Acanthiza chrysorrhoa</i>	Yellow-rumped Thornbill	Aves	Native	Protected
<i>Acanthiza lineata</i>	Striated Thornbill	Aves	Native	Protected
<i>Acanthiza pusilla</i>	Brown Thornbill	Aves	Native	Protected
<i>Cacatua galerita</i>	Sulphur-crested Cockatoo	Aves	Native	Protected
<i>Cacatua sanguinea</i>	Little Corella	Aves	Native	Protected
<i>Cacomantis flabelliformis</i>	Fan-tailed Cuckoo	Aves	Native	Protected
<i>Calyptorhynchus funereus</i>	Yellow-tailed Black-Cockatoo	Aves	Native	Protected
<i>Chalcites basalis</i>	Horsfield's Bronze-cuckoo	Aves	Native	Protected
<i>Egretta novaehollandiae</i>	White-faced Heron	Aves	Native	Protected
<i>Eolophus roseicapilla</i>	Galah	Aves	Native	Protected
<i>Falco cenchroides</i>	Nankeen Kestrel	Aves	Native	Protected
<i>Pachycephala rufiventris</i>	Rufous Whistler	Aves	Native	Protected
<i>Platycercus eximius</i>	Eastern Rosella	Aves	Native	Protected
<i>Rhipidura leucophrys</i>	Willie Wagtail	Aves	Native	Protected
<i>Oryctolagus cuniculus</i>	European Rabbit	Mammalia	Exotic	-
<i>Macropus giganteus</i>	Eastern Grey Kangaroo	Mammalia	Native	Protected
<i>Tachyglossus aculeatus</i>	Short-beaked Echidna	Mammalia	Native	Protected
<i>Acritoscincus duperreyi</i>	Eastern Three-lined Skink	Reptilia	Native	Protected
<i>Ctenotus robustus</i>	Eastern Striped Skink	Reptilia	Native	Protected
<i>Hemiergis talbingoensis</i>	Three-toed Skink	Reptilia	Native	Protected
<i>Lampropholis guichenoti</i>	Garden Skink	Reptilia	Native	Protected
<i>Suta flagellum</i>	Little Whip Snake	Reptilia	Native	BC Act Vulnerable

Appendix E. Striped Legless Lizard Survey Results

Check	Date	Start Time	End Time	Start Temp	End Temp	Cloud	Wind	Grid	Tile ID	Species	Common Name	Obs Type	Number	Notes
1	19/09/2023	9:53 AM	10:53 AM	22.6	24.2	0/8	22 km/h NW	Grid 1	4-C	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 3	5-E	<i>Hemiergis talbingoensis</i>	Three-toed Skink	Individual	1	
								Grid 3	7-A	<i>Hemiergis talbingoensis</i>	Three-toed Skink	Individual	1	
2	26/09/2023	9:48 AM	10:30 AM	14.6	14.9	7/8	16 km/h NE	Grid 1	1-B	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 1	3-C	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 1	3-B	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 1	5-D	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 1	6-B	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 1	7-B	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 1	9-A	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 1	10-E	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 2	1-B	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 2	4-E	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 2	3-E	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 2	7-A	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 2	8-A	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 2	8-D	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 2	10-E	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 2	9-E	<i>Ctenotus robustus</i>	Eastern Striped Skink	Individual	1	
								Grid 2	10-A	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 3	2-D	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 3	4-B	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 3	4-C	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 3	3-E	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 3	6-D	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 3	5-D	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 3	5-A	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 3	10-D	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 3	9-D	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 3	10-A	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
Grid 3	9-A	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1									
Grid 4	3-E	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1									
Grid 4	4-C	<i>Suta flagellum</i>	Little Whip Snake	Individual	1									
Grid 4	6-B	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1									
Grid 4	6-E	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1									
3	3/10/2023	9:14 AM	9:36 AM	24	24.6	1/8		Grid 1	1-D	<i>Hemiergis talbingoensis</i>	Three-toed Skink	Individual	2	

Check	Date	Start Time	End Time	Start Temp	End Temp	Cloud	Wind	Grid	Tile ID	Species	Common Name	Obs Type	Number	Notes
							41 km/h NW	Grid 2	1-D	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	2	
								Grid 2	4-B	<i>Hemiergis talbingoensis</i>	Three-toed Skink	Individual	3	
								Grid 3	9-A	<i>Hemiergis talbingoensis</i>	Three-toed Skink	Individual	1	
								Grid 3	8-E	-	Unknown Skink	Individual	2	
								Grid 4	10-D	-	Unknown Skink	Individual	2	
3	3/10/2023	9:14 AM	9:36 AM	24	24.6	1/8	41 km/h NW	Grid 4	6-E	<i>Hemiergis talbingoensis</i>	Three-toed Skink	Individual	1	
4	10/10/2023	8:00 AM	9:14 AM	8.8	12.5	8/8	6 km/h N	Grid 1	5-D	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 1	7-B	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 1	8-C	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 1	10-B	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 2	10-D	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 2	9-A	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 2	6-E	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 2	5-D	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 2	5-E	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	2	
								Grid 2	4-E	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 2	3-A	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	3	
								Grid 2	1-B	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 3	10-E	<i>Acritoscincus duperreyi</i>	Eastern Three-lined Skink	Individual	1	
								Grid 3	10-A	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	3	
								Grid 3	9-A	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 3	9-B	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 3	9-D	<i>Ctenotus robustus</i>	Eastern Striped Skink	Individual	1	
								Grid 3	8-D	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 3	8-A	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 3	7-A	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 3	6-D	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 3	6-E	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 3	5-A	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 3	5-B	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 3	5-D	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	4	
								Grid 3	4-D	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 3	4-B	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 3	3-D	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
Grid 3	2-D	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1									
Grid 4	1-B	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1									
Grid 4	1-D	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1									
Grid 4	3-B	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	3									

Check	Date	Start Time	End Time	Start Temp	End Temp	Cloud	Wind	Grid	Tile ID	Species	Common Name	Obs Type	Number	Notes
								Grid 4	3-C	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 4	4-D	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 4	4-A	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 4	5-A	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 4	6-E	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 4	6-D	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	2	
								Grid 4	7-C	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	2	
								Grid 4	8-C	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 4	9-C	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	2	
4	10/10/2023	8:00 AM	9:14 AM	8.8	12.5	8/8	6 km/h N	Grid 4	9-D	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 4	10-C	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
5	18/10/2023	9:07 AM	10:12 AM	12	14.3	7/8	11 km/h SE	Grid 2	1-D	<i>Acritoscincus duperreyi</i>	Eastern Three-lined Skink	Individual	1	
								Grid 2	1-A	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	Common skinks (<i>Lampropholis sp.</i>) under most tiles
								Grid 1	1-A	-	Unknown Skink	Individual	1	Common skinks (<i>Lampropholis sp.</i>) under most tiles
								Grid 3	9-A	<i>Acritoscincus duperreyi</i>	Eastern Three-lined Skink	Individual	2	
								Grid 3	8-E	<i>Hemiergis talbingoensis</i>	Three-toed Skink	Individual	1	
								Grid 3	1-A	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	Common skinks (<i>Lampropholis sp.</i>) under most tiles
								Grid 4	2-A	<i>Acritoscincus duperreyi</i>	Eastern Three-lined Skink	Individual	3	
								Grid 4	7-D	<i>Hemiergis talbingoensis</i>	Three-toed Skink	Individual	1	
								Grid 4	1-A	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	Common skinks (<i>Lampropholis sp.</i>) under most tiles
6	30/10/2023	10:35 AM	11:18 AM	25.1	26.3	1/8	41 km/h NW	Grid 3	3-C	-	Unknown Skink	Individual	1	
								Grid 4	6-B	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
7	7/11/2023	8:37 AM	9:19 AM	13.5	15.8	0/8	1 km/h NW	Grid 1	2-E	<i>Hemiergis talbingoensis</i>	Three-toed Skink	Individual	1	
								Grid 1	3-E	-	Unknown Skink	Individual	1	
								Grid 1	5-D	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 2	7-A	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 2	5-B	<i>Lampropholis guichenoti</i>	Garden Skink	Individual	1	
								Grid 3	7-A	-	Unknown Skink	Individual	1	
								Grid 3	1-A	-	Unknown Skink	Individual	1	
								Grid 4	3-C	<i>Hemiergis talbingoensis</i>	Three-toed Skink	Individual	1	
8	14/11/2023	9:14 AM	9:45 AM	15	18	2/8	1 km/h NW	Grid 2	7-B	-	Unknown Skink	Individual	1	
								Grid 2	8-C	-	Unknown Skink	Individual	1	