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Carlo Di Giulio
Associate Director
Gyde Consulting
Level 6, 120 Sussex Street
Sydney, NSW, 2000

Cumberland Ecology
PO Box 2474
Carlingford Court 2118
NSW Australia
Telephone (02) 9868 1933
ABN 14 106 144 647
Web: www cumberlandecology com.au

Summary of the Ecological Constraints and Reporting Requirements for a Planning Proposal at 56 Hilldowns Road, Kalkite

Dear Carlo,

As you are aware, Cumberland Ecology has been working towards Biodiversity Certification of the land at 56 Hilldowns Road, Kalkite. We understand that recent correspondence with the Biodiversity and Conservation Division has resulted in the Sacco Building Group requesting changes to the strategy for the associated planning proposal. As such, Cumberland Ecology has been requested to prepare a separate summary letter to allow the planning proposal to enter the public exhibition phase.

Cumberland Ecology understands that discussions were held with representatives of the Department of Planning and Environment whose feedback included that a high level letter report is sufficient to get the matter to public exhibition. The letter is provided in **Appendix A** of this document, and includes a short description of the site, a summary of the outcomes of the 2022-2023 surveys, potential future impacts, a summary of recommended mitigation measures and future assessment requirements.

If any further information is required, or if you have any questions, please do not hesitate to contact myself or Jesse Luscombe on (02) 9868 1933.

Yours sincerely,

David Robertson

David Robertson
Director
david.robertson@cumberlandecology.com.au

APPENDIX A :

Summary of Ecological Constraints and Future Assessment Pathways

A.1. Introduction

Cumberland Ecology has been commissioned by Gyde Consulting on behalf of Sacco Building Group (the proponent) to provide a high-level letter on ecological matters relating to a planning proposal for land located at 56 Hilldowns Road, Kalkite New South Wales (NSW) (the 'subject land') which comprises Lot 5 DP529579 and Lot 190 DP756727 (see **Figure 1**). The planning proposal (hereafter referred to as 'the project') seeks to change the zoning to facilitate future subdivision and development (**Figure 2**). This letter summarises the ecological constraints and future reporting requirements following submission of the planning proposal.

Since July 2022, Cumberland Ecology has been working towards Biodiversity Certification of the subject land with extensive collaboration with the Biodiversity Conservation Division (BCD). However, we understand that due to timing constraints, recent correspondence between the Gyde Consulting and the Department of Planning and Environment (DPE) has resulted in the proponent requesting the preparation of a separate summary letter to allow the planning proposal to enter the public exhibition phase. It is understood that these discussions resulted in feedback from DPE that indicated that a high level letter report is sufficient to get the matter to public exhibition.

A.1.1. Purpose

The purpose of this letter is to describe the current biodiversity values of the subject land and provide a summary of the ongoing assessment undertaken for the Biodiversity Certification Assessment Report (BCAR). In particular, this includes threatened species, populations and communities that are listed under the NSW *Biodiversity Conservation Act 2016* (BC Act) and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Further to the above, this letter identifies the future assessment pathway and recommended mitigation measures that may be required for future development within the subject land that would be facilitated by the project.

The specific objectives of this letter are to:

- Provide a summary of the biodiversity values and ecological condition of the subject land;
- Identify any threatened species, populations or ecological communities (as listed under the BC Act and/or EPBC Act) existing in the subject land;
- Describe the pathway for future ecological assessment that will apply following the planning proposal public exhibition phase; and
- Provide avoidance measures undertaken to date and recommend mitigation measures to reduce the impacts of the project and subsequent development on biodiversity values.

A.1.2. Project Description

Gyde Consulting are acting on behalf of Sacco Building Group for the project which requires submission of a rezoning planning proposal to Snowy Monaro Council for the subject land. The project seeks to convert the existing RU1 – Rural Land use zone to a combination of RU5 – Village, E1 – Local Centre, SP2 – Infrastructure, RE1 – Public Recreation, C4 – Environmental Living and C2 – Environmental Conservation (**Figure 2**). The project also seeks to adopt minimum lot size development standards of 850 m^2, 2 ha and 5 ha. The project would

facilitate subdivision of the subject land which aims to deliver 220 mostly residential lots. Environmental conservation, including Biodiversity Conservation and Stewardship sites will also form part of the planning proposal, as well as some infrastructure upgrades such as road upgrades.

A.1.3. Site Description

The subject land is split into three parts by a hairpin turn of Kalkite Road; Precinct 1 in the west, Precinct 2 in the centre and Precinct 3 in the east – Hilldowns Road also cutting through the Precinct 1 (**Figure 1**). The subject land as a whole, is currently managed for agricultural purposes and comprises pastureland and woodland that is intermittently grazed by cattle. Fencing separates bisects portions of the subject land.

Precinct 1 is immediately adjacent Lake Jindabyne sloping westward gently towards the shoreline, and currently comprises improved pasture. It is separated into smaller paddocks by fence lines which has resulted in paddocks dominated by exotic grasses. Other paddocks on the western extent have retained some native ground cover. This precinct also has a small number of mature canopy trees scattered throughout the grasslands as well as areas of granitic rocky outcropping towards the lake shoreline.

Precinct 2 in the centre of the subject land exists also as managed pastureland. It is separated from Precinct 1 and 3 by a hairpin turn of Kalkite Road in the east and west. It slopes moderately steeply towards the west, sloping steeply on the western boundary. There are areas of woodland in the west and running eastward along the northern boundary providing connectivity to large tracts of bushland surrounding the subject land. These areas of woodland form part of a north-south running corridor. The remainder of Precinct 2 comprises previously cleared paddock grassland with small patches of scattered woodland throughout. A mapped first order watercourse flows in a westward direction downslope along the northern boundary forming a small area of aquatic habitat.

Precinct 3 is situated to the eastern side of Precinct 2. The precinct slopes steeply uphill towards the east, away from Kalkite Road, and contains no mapped watercourses. The southern boundary of this precinct contains large areas of woodland, some of which is confined to the steeper slopes which are unable to be grazed. The remainder of the precinct contains some small patches of woodland as well as areas that are heavily grazed and managed as pastureland.

Prior to European occupation, the subject land occurred on the hillside sloping downhill to the Eucumbene River in the west. In the late 1960s, the construction of Jindabyne Dam resulted in the inundation of the floodplain and surrounding slopes largely by flow from Eucumbene River, Snowy River and Thredbo River, forming Lake Jindabyne. Today, the subject land runs to the shoreline of the lake. Prior to the inundation, the vicinity of Kalkite was associated with a mosaic of savannah woodland and wet tussock grassland; areas of grassland likely confined to lower lying parts of the landscape on the banks of Eucumbene River (Costin 1954). Since European settlement of the area in the 1800s, the lower slopes and old floodplain terraces of the subject land (Precinct 1) have been intensely and repeatedly, cultivated and fertilised. Similarly, review of the historical imagery held by NSW Spatial Services (2023) between 1944 and 1977 indicate that, the upper slopes of the subject land in Precinct 2 and 3, while not exhibiting the same level of cultivation, have been consistently cleared of woodland for the last 80 years. Further to this, recent imagery of the subject land held by Google Earth (2023) display considerable scouring on the steeper slopes likely caused by periods of drought and stock

movement . Ongoing clearing, cultivation and soil erosion has led to areas of woodland regrowth limited to the steeper slopes of the subject land.

A.2. Methodology

Surveys that have been undertaken to date for the purposes of future Biodiversity Certification are summarised below. A high level summary of the survey methods used is provided below. All methods were undertaken in accordance with the Biodiversity Assessment Method (BAM) and relevant threatened species survey guidelines.

A.2.1. Vegetation Mapping

Previous vegetation mapping by DPE (2022) was accessed prior to the survey in order to determine vegetation communities that could occur within the subject land. The vegetation within the subject land was subsequently ground-truthed by Cumberland Ecology in December 2022 and March 2023. Where vegetation community boundaries were found to differ from the existing mapping, records were made of new boundaries using a hand-held Global Positioning System and mark-up of aerial photographs. The data collected was analysed and the resultant information was synthesised using Geographic Information Systems to produce a vegetation map of the subject land. The following techniques were also used in the preparation of vegetation mapping units and community selection:

- A plot-based vegetation survey and vegetation integrity assessment undertaken concurrently in accordance with the BAM (hereafter referred to as BAM plots) (see **Figure 3**);
- Digital Elevation Models using Light Detection and Ranging (LiDAR);
- Review of the Plant Community Types (PCT) held within the BioNet Vegetation Classification database; and
- Plot to PCT Assignment Tool.

A.2.2. Threatened Species Survey

Threatened species surveys were conducted across six survey periods between August 2022 and January 2023. A summary of the survey periods and required surveys conducted in accordance with BAM are provided in **Table 1**, below. A visualisation of the threatened species survey methodology used to date for flora and fauna is provided in **Figure 3** and **Figure 4**, respectively.

Table 1 Methodology utilised for the project to date

Survey Period	Species	Survey Methodology Used
August 2022 (Fauna)	Powerful Owl	Call Playback/Spotlighting, Stag Watches,
	Barking Owl	Call Playback/Spotlighting, Stag Watches
	Little Eagle	Habitat Assessment
	White-bellied Sea-Eagle	Habitat Assessment
	Koala	Spotlighting
	Gang-gang Cockatoo	Diurnal Bird Survey (bird census)
	Glossy Black-Cockatoo	Diurnal Bird Survey (bird census)

Survey Period		Species	Survey Methodology Used
		Pink Robin	Diurnal Bird Survey (bird census)
November (Fauna)	**2022**	Little Eagle	Habitat Assessment
		White-bellied Sea-Eagle	Habitat Assessment
		Gang-gang Cockatoo	Diurnal Bird Survey (bird census)
		Pink Robin	Diurnal Bird Survey (bird census)
December (Fauna)	**2022**	Barking Owl	Call Playback/Spotlighting, Stag Watches
		Eastern Pygmy-possum	Baited Infrared Cameras
		Large Bent-winged Bat	Harp Trap, Acoustic Bat Detection
		Southern Myotis	Harp Trap, Acoustic Bat Detection
		Koala	Spot Assessment Technique Surveys, Call Playback/Spotlighting
		Pink-tailed Legless Lizard	Diurnal Hand Searches
		Alpine Tree Frog	Call Playback/Spotlighting
December (Flora)	**2022**	*Caladenia tessellata*	Threatened Flora Transects, BAM Plot Survey
		Diuris aequalis	Threatened Flora Transects, BAM Plot Survey
		Diuris ochroma	Threatened Flora Transects, BAM Plot Survey
		Swainsona sericea	Threatened Flora Transects, BAM Plot Survey
		Prasophyllum petilum	Threatened Flora Transects, BAM Plot Survey
		Thesium australe	Threatened Flora Transects, BAM Plot Survey
		Monotoca rotundifolia	Threatened Flora Transects, BAM Plot Survey
		Calotis glandulosa	Threatened Flora Transects, BAM Plot Survey
		Leucochrysum albicans var. tricolor	Threatened Flora Transects, BAM Plot Survey
		Dodonaea procumbens	Threatened Flora Transects, BAM Plot Survey
		Rutidosis leptorrhynchoides	Threatened Flora Transects, BAM Plot Survey
		Eucalyptus aggregata	Threatened Flora Transects, BAM Plot Survey
		Eucalyptus pulverulenta	Threatened Flora Transects, BAM Plot Survey
		Glycine latrobaena	Threatened Flora Transects, BAM Plot Survey
		Lepidium hyssopifolium	Threatened Flora Transects, BAM Plot Survey
		Pimelea bracteata	Threatened Flora Transects, BAM Plot Survey
		Pomaderris pallida	Threatened Flora Transects, BAM Plot Survey
		Prasophyllum bagoense	Threatened Flora Transects, BAM Plot Survey
		Pterostyis oreophila	Threatened Flora Transects, BAM Plot Survey
January 2023 (Flora)		*Caladenia tessellata*	Threatened Flora Transects
		Diuris aequalis	Threatened Flora Transects

Survey Period	Species	Survey Methodology Used
	Diuris ochroma	Threatened Flora Transects
	Swainsona sericea	Threatened Flora Transects
	Prasophyllum petilum	Threatened Flora Transects
	Thesium australe	Threatened Flora Transects
	Monotoca rotundifolia	Threatened Flora Transects
	Calotis glandulosa	Threatened Flora Transects
	Leucochrysum albicans var. tricolor	Threatened Flora Transects
	Dodonaea procumbens	Threatened Flora Transects
	Rutidosis leptorrhynchoides	Threatened Flora Transects
	Eucalyptus aggregata	Threatened Flora Transects
	Eucalyptus pulverulenta	Threatened Flora Transects
	Glycine latrobaena	Threatened Flora Transects
	Lepidium hyssopifolium	Threatened Flora Transects
	Pimelea bracteata	Threatened Flora Transects
	Pomaderris pallida	Threatened Flora Transects
	Prasophyllum bagoense	Threatened Flora Transects
	Pterostyis oreophila	Threatened Flora Transects

A.3. Results

A.3.1. Plant Community Types

The vegetation analysis determined that the native vegetation within the subject land aligned with three PCTs held within the BioNet Vegetation Classification database (**Table 2**). The sections below provide descriptions of the various condition states of the PCTs identified within the subject land and their distribution is shown in **Figure 5**. Detailed descriptions of these PCTs and the justification for PCT selection is provided in the sections below.

Table 2 Plant community types within the subject land

PCT #	PCT Name	Zone	BC Act Status	EPBC Act Status	Subject Land (ha)
3341	Monaro-Gourock Frost Hollow Grassy Woodland	1	Monaro Tableland Cool Temperate Grassy Woodland CEEC	Not listed	12.20
3341	Monaro-Gourock Frost Hollow Grassy Woodland	2	Monaro Tableland Cool Temperate Grassy Woodland CEEC	Not listed	10.57

PCT #	PCT Name	Zone	BC Act Status	EPBC Act Status	Subject Land (ha)
3341	Monaro-Gourock Frost Hollow Grassy Woodland	3	Monaro Tableland Cool Temperate Grassy Woodland CEEC	Not listed	13.76
3742	Monaro Mountains Snow Gum Shrub Forest	4	Not listed	Not listed	3.94
3413	Monaro Snow Grass-Kangaroo Grass Grasslands	5	Not listed	Natural Temperate Grassland of the Southern Tablelands of NSW and the Australian Capital Territory ecology CEEC	1.27
3413	Monaro Snow Grass-Kangaroo Grass Grasslands	6	Not listed	Not listed	18.21
-	Exotic Woody Vegetation	-	Not listed	Not listed	0.20
-	Exotic Grassland	-	Not listed	Not listed	15.40
-	Cleared Land	-	Not listed	Not listed	0.62
Total					**76.17**

A.3.1.1. PCT 3341

PCT Name: Monaro-Gourock Frost Hollow Grassy Woodland

Vegetation Formation: Tableland Clay Grassy Woodlands

Vegetation Class: Grassy Woodlands

Percent Cleared Value: 86.01%

A.i. Condition States

The occurrence of PCT 3341 in the subject land includes intact grassy woodlands and open woodlands and derived native grasslands and occurs in three broad condition states numbered Zone 1 through Zone 3. Each of these condition states is described below.

A.a. Zone 1

This zone consists of relatively intact woodlands to open woodlands dominated by *Eucalyptus pauciflora* and rarely *Eucalyptus rubida* and *Acacia dealbata*. In places the canopy layer is likely to have been thinned. It occurs on gentle to steeply sloping areas with some outcropping rock. Small shrubs are present in places with low cover including *Melicytus denatus, Bossiaea buxifolia, Bossiaea foliosa* and *Pimelea pauciflora*. The ground layer is dominated by introduced grasses such as *Vulpia bromoides* and *Bromus* sp. Native grasses present include *Poa sieberiana*, *Poa labillardierei, Austrostipa scabra* subsp. *falcata* and *Rytidosperma* sp. Native forbs include *Acaena echinata*, *Chrysocephalum semipapposum, Ajuga australis, Euchiton japonicus*, *Geranium solanderi,*

Gonocarpus tetragynus, Hydrocotyle laxiflora, Hypericum gramineum, Rumex brownii, Grona varians and *Vittadinia cuneata*. Exotic forbs include *Acetosella vulgaris, Verbascum thapsus* and *Trifolium* sp. Exotic scramblers such as *Rubus fruiticosus* sp. agg. and *Rosa rubinigosa* are also present in the shrub layer.

An example of this condition state is shown in **Photograph 1**.

Photograph 1 PCT 3341 Zone 1

A.b. Zone 2

Zone 2 includes derived grasslands that occur on and around rocky outcrops, other steeply sloping areas and road edges that have provided some protection from grazing. As a result, small shrubs and forbs are typically present between rocks. Shrub species typically grow in a low prostrate form on and between rocks as a result of browsing and include *Melicytus denatus, Bossiaea buxifolia, Arcothamnus hookeri, Pimelea linifolia*, *Pimelea pauciflora* and rarely *Acacia* species such as *Acacia dealbata* or *Acacia siculiformis.* Overall, the vegetation is dominated by introduced species including *Vulpia bromoides* and *Trifolium arvense*. A diversity of native grasses are present at low abundance including *Poa sieberiana, Themeda triandra*, *Austrostipa scabra* subsp. *falcata, Austrostipa bigenticulata, Dichelachne crinita* and *Elymus scaber.* A high diversity of forbs are present including *Acaena echinata Dianella longifolia, Convolvulus erubescens, Craspedia variabilis, Crassula sieberiana, Euchiton japonicus, Grona varians* and *Hydrocotyle laxiflora*.

An example of this condition state is shown in **Photograph 2**.

Photograph 2 PCT 3341 Zone 2

A.c. Zone 3

Zone 3 includes remaining derived grasslands that occur on more gently sloping areas that have been subject to a long history of grazing. They generally have a low diversity of native grasses and forbs and a high cover of introduced grasses including *Bromus molliformis* and *Vulpia bromoides*. Other introduced species are widespread including *Acetosella vulgaris, Verbascum thapsus, Hypericum perforatum, Hypochoeris radicata, Cirsium vulgare* and *Echium plantagineum.* Native grasses present at low diversity/cover include *Austrostipa scabra* subsp. *falcata, Poa labillardierei* and *Rytidosperma caespitosum.* Native forbs present include *Geranium solanderi, Epilobium billardiereanum*, *Cymbonotus lawsonianus, Dichondra repens* and *Hydrocotyle laxiflora*.

An example of this condition state is shown in **Photograph 3**.

Photograph 3 PCT 3341 Zone 4

A.3.1.2. PCT 3742

PCT Name: Monaro Mountains Snow Gum Shrub Forest

Vegetation Formation: Southern Tableland Dry Sclerophyll Forests

Vegetation Class: Dry Sclerophyll Forests (Shrubby Formation)

Percent Cleared Value: 48.65%

A.i. Condition States

PCT 3742 is present as one condition state (Shrubby Woodland).

A.a. Zone 4

Zone 4 consists of intact open forest to woodlands or rarely open woodlands (were subject to clearing) dominated by *Eucalyptus pauciflora* (Snow Gum) with occasional *Eucalyptus rubida* (Candlebark) and *Eucalyptus viminalis* (Ribbon Gum) with *Acacia dealbata* (Silver Wattle) in the subcanopy. It occurs on steeply sloping southwest facing slope that contain extensive outcropping granite. This PCT has a dense shrub layer to 30% cover averaging 1.5 m tall of C*assinia aculeata,* and *C. longifolia*. Other shrubs present include *Melicytus denatus, Bossiaea buxifolia, Bossiaea foliosa* and *Pimelea pauciflora* and the vine *Clematis microphylla.* Grasses and forbs are abundant between rocks. Grasses include *Poa sieberiana, Austrostipa scabra* subsp. *falcata, Dichelachne crinita, Elymus scaber* and *Rytidosperma caespitosum*. Forbs include *Chrysocephalum semipapossum, Acaena echinata, Dichondra repens, Goncarpus tetragynus, Glycine clandestina, Grona varian*s and *Euchiton japonicus.* In places the canopy is likely to have been partially cleared, with dense shrub thickets

of *Cassinia* species remaining present on rock outcrops. The introduced grass *Vulpia bromoides* is widespread on disturbed areas.

Examples of this condition state are provided as **Photograph 4** and **5**.

Photograph 4 PCT 3742 on a steep rocky slope

Photograph 5 PCT 3742 subject to partial clearing with shrub layer of *Cassinia* species remaining

A.3.1.3. PCT 3413

PCT Name: Monaro Snow Grass-Kangaroo Grass Grasslands

Vegetation Formation: Grasslands

Vegetation Class: Temperate Montane Grasslands

Percent Cleared Value: 73.02%

A.i. Condition States

The occurrence of PCT 3413 in the subject land includes all areas considered to have the potential to be forms of natural native grasslands on the basis of an assessment of historical aerial imagery, adjacent vegetation, topography, landform and soils within the subject land, and occurs in two broad condition states numbered Zone 5 through Zone 6. Each of these condition states is described below.

A.a. Zone 5

This condition state occurs within gently sloping concaved drainage depressions where it is considered that cold air drainage may have resulted in small areas of natural grassland within areas otherwise containing *Eucalyptus pauciflora* dominated woodlands (PCT 3341). Within these frost hollows the dominant grass is *Poa labillardierei* with up to 30% cover. Soils have more moisture than in adjacent areas with isolated occurrences of sedges and rushes such as *Carex inversa, Schoenus apogon* and *Juncus filicaulis*. There is a high cover of

introduced grasses including *Vulpia bromoides* and *Bromus molliformis*. Introduced forbs are abundant and include *Acetosella vulgaris, Hypericum perforatum, Hypochoeris radicata, Taraxicum officinale* and *Trifolium* sp.

An examples of this condition state is provided as **Photograph 6**.

Photograph 6 PCT 3413 Frost Hollow Grassland within a gently sloping drainage depression

A.b. Zone 6

This zone occurs at low altitudes on low granitic hills, foot slopes and adjacent drainage depressions close to Lake Jindabyne. It consists of highly degraded grasslands dominated by introduced species. Dominant introduced grasses include *Vulpia bromoides, Bromus diandrus*, *Bromus catharticus* and *Lolium perenne*. Introduced forbs include *Acetosella vulgaris, Marrabium vulgare, Plantago lanceolata, Rapistrum rugosum, Salvia verbenacea* and *Trifolium* sp. Native grasses present at low abundance include *Austrostipa scabra* subsp. *falcata* and *Austrostipa bigenticulata.* Native forbs present at low abundance include *Convolvulus eurobsecens* and *Geranium solanderi*.

An example of this condition state is shown in **Photograph 7**.

Photograph 7 PCT 3413 Zone 6

A.3.2. Other Vegetation Types

A.3.2.1. Exotic Woody Vegetation

This vegetation type includes planted exotic vegetation around the farmhouse. It includes screening hedges of *Cupressus* cultivars, ornamental tree plantings of *Gleditsia triacanthos* (Honey Locust) and planted fruit trees including *Prunus* cultivars. These planted trees occur over exotic grassland. Exotic Woody Vegetation does not align with any PCTs or TECs.

An example of Exotic Woody Vegetation is shown in **Photograph 8.**

Photograph 8 Exotic Woody Vegetation in Precinct 1

A.3.2.2. Exotic Grassland (Improved Pasture)

Exotic Grassland includes areas of improved pasture that have been subject to cultivation and sowing of introduced pasture grasses and pasture legumes. These Exotic Grasslands occur in several fenced off paddocks close to the farmhouse. Dominant introduced grasses include *Dactylis glomerata* (Cocksfoot), *Festuca rubra* (Red Fescue), *Phalaris aquatica* (Phalaris), *Bromus molliformis* (Soft Brome), *Bromus catharticus* (Prairie Grass), *Bromus diandrus* (Great Brome) and *Lolium perenne* (Perennial Rye Grass). Pasture legumes include *Trifolium repens* (White Clover), *Trifolium subterraneum* (Subterranean Clover) and *Medicago polymorpha.* A range of other pasture weeds are present including *Marrabium vulgare* (Horehound), *Plantago lanceolata, Rumex crispus* and *Polygonum aviculare*.

Exotic Grassland (Improved Pasture) does not align with any PCTs or TECs.

An example of Exotic Grassland (Improved Pasture) is shown in **Photograph 9**.

Photograph 9 Exotic Grassland (Improved Pasture) within the subject land

A.3.2.3. Cleared Land

Cleared Land includes the farmhouse, sheds and access road. Cleared land does not align with any PCTs or TECs.

A.3.3. Threatened Ecological Communities

A.3.3.1. Biodiversity Conservation Act 2016

All condition states of PCT 3341 align with the BC Act listed CEEC Monaro Tableland Cool Temperate Grassy Woodland. These condition states are summarised in **Table 3** and are shown on **Figure 6**.

Table 3 Vegetation zones that conform to BC Act listed TECs

PCT No. and Name	Zone Name	BC Act TEC	Subject Land (ha)
3341 Monaro-Gourock Frost Hollow Grassy Woodland	Zone 1: Grassy Woodland	Monaro Tableland Cool Temperate Grassy Woodland CEEC	12.20
3341 Monaro-Gourock Frost Hollow Grassy Woodland	Zone 2: Rocky Grassland	Monaro Tableland Cool Temperate Grassy Woodland CEEC	10.57
3341 Monaro-Gourock Frost Hollow Grassy Woodland	Zone 3: Other Grassland	Monaro Tableland Cool Temperate Grassy Woodland CEEC	13.76
Total			**36.53**

A.3.3.2. Environment Protection and Biodiversity Conservation Act 1999

Zone 5 (PCT 3413) aligns with the EPBC Act listed CEEC Natural Temperate Grassland of the Southern Tablelands of NSW and the Australian Capital Territory ecological community. This condition state is summarised in **Table 4** and are shown on **Figure 6**.

Table 4 Vegetation zones that conform to EPBC Act listed TECs

PCT No. and Name	Zone Name	EPBC Act TEC	Subject land
3413 Monaro Snow Grass-Kangaroo Grass Grasslands	Zone 5: Frost Hollow Grasslands	Natural Temperate Grassland of the Southern Tablelands of NSW and the Australian Capital Territory ecology CEEC	1.27 ha

A.3.4. Threatened Species

The threatened species recorded within the subject land are shown in **Table 5**. The recorded locations of these species are shown on **Figure 6**.

Table 5 Threatened species records

Scientific Name	Common Name	Listing Status	Credit Species Type
Threatened Flora			
Swainsona sericea		Vulnerable (BC Act)	Species Credit
Dodonaea procumbens	Creeping Hop Bush	Vulnerable (BC Act) Vulnerable (EPBC Act)	Species Credit
Threatened Fauna			
Falsistrellus tasmaniensis	Eastern False Pipistrelle	Vulnerable (BC Act)	Ecosystem Credit
Miniopterus orianae oceanensis	Large Bent-winged Bat	Vulnerable (BC Act)	Ecosystem Credit (Foraging)
Stagonopleura guttata	Diamond Firetail	Vulnerable (BC Act)	Ecosystem Credit
Artamus cyanopterus	Dusky Woodswallow	Vulnerable (BC Act)	Ecosystem Credit
Petroica boodang	Scarlet Robin	Vulnerable (BC Act)	Ecosystem Credit
Callocephalon fimbriatum	Gang-gang Cockatoo	Vulnerable (BC Act) Endangered (EPBC Act)	Ecosystem Credit (Foraging)

A.4. Discussion

This section provides a brief summary of the potential impacts associated with future development of the subject land as well as a discussion of the ecological constraints to future development present within the subject land. This section also discusses the future ecological assessment pathway.

At this stage, an indicative layout of the areas proposed for certification has been prepared in consultation with BCD and Snow Monaro Council representatives **(Figure 7).** This indicative layout will be further refined with

future a revision to be used to assess impacts of the certification area, and Biodiversity Stewardship Sites in the BCAR. The certification area as shown on **Figure 7** includes the following:

- Indicative building envelopes;
- APZs (40 m buffer surrounding the indicative building envelopes);
- Fence lines and power connections (1 m buffer); and
- Assumes Precinct 1 requires total removal of vegetation.

The above listed items were digitised using Geographic Information Systems using the plans from **Figure 2**. Indicative impacts to vegetation zones are provided in **Table 6** below. No credit calculations were prepared at this stage of the project as the process for Biodiversity Certification will resume following submission of the planning proposal documentation.

Table 6 Vegetation zones within the proposed certification area and Biodiversity Stewardship Sites

Vegetation Zone	Subject Land (ha)	Proposed Certification Area (ha)	Biodiversity Stewardship Sites (ha)
Zone 1: PCT 3341	12.20	0.81	8.77
Zone 2: PCT 3341	10.57	4.00	2.09
Zone 3: PCT 3341	13.76	3.01	2.11
Zone 4: PCT 3742	3.94	0.15	2.71
Zone 5: PCT 3413	1.27	0.30	0.00
Zone 6: PCT 3413	18.21	18.21	0.00
Exotic Woody Vegetation	0.20	0.20	0.00
Exotic Grassland	15.40	15.40	0.00
Cleared Land	0.62	0.62	0.00
Total	**76.17**	**42.70**	**15.68**

A.4.1. Potential Ecological Impacts

Any future development of the subject land will require some land clearance that has the potential to directly and indirectly impact biodiversity values within the subject land and surrounds. Potential impacts include:

- Removal of vegetation conforming to a TEC;
- Removal of fauna habitat features such as rocky outcropping, hollow-bearing trees, coarse woody debris, and blossom-producing trees and shrubs;
- Removal of potential habitat for threatened flora and fauna species;
- Modification of microhabitats through edge effects;

- Modification of habitat connectivity;
- Runoff, sedimentation and erosion;
- Weed invasion; and
- Injury or mortality to fauna species.

Such impacts will be assessed as part of the Biodiversity Certification process. Further detail for the future assessment pathway is provided in ***Section A.5***.

A.4.2. Constraints

Key ecological constraints identified within the subject land include:

- Presence of vegetation conforming to TECs;
- Presence of threatened flora and fauna, and habitat for threatened species, including habitat features;
- Presence of an SAII entity; and
- Land within riparian corridors.

These constraints are briefly discussed below.

A.4.2.1. Threatened Ecological Community

Two TECs have been identified as occurring within the subject land; one conforming to a BC Act listed TEC and one conforming to an EPBC Act listed TEC. They include:

- Monaro Tableland Cool Temperate Grassy Woodland (CEEC – BC Act); and
- Natural Temperate Grassland of the Southern Tablelands of NSW and the Australian Capital Territory ecology (CEEC – EPBC Act).

A higher level of conservation significance is attributed to this vegetation community and impacts, both direct and indirect will be avoided and mitigated where possible. The project will likely have minor impacts to these listed communities and as part of the BCAR process, the project will calculate and offset credits in accordance with the BOS. It is also noted that areas of Monaro Tableland Cool Temperate Grassy Woodland occur in the proposed Biodiversity Stewardship Sites and as such, will produce credits for retention and management.

A.4.2.2. Threatened Flora and Fauna Records and Habitat

Any future assessment would need to consider the significance of impacts to threatened species. Due to future development being assessed using Biodiversity Certification, the future assessment would require the consideration of threatened species, in particular species credit species. Eight threatened species have been identified as occurring within the subject land; two threatened flora species and six threatened fauna species. They include:

- *Swainsona sericea* (V - BC Act)

- *Dodonaea procumbens* - Creeping Hop Bush (V - BC Act & EPBC Act)
- Eastern False Pipistrelle - *Falsistrellus tasmaniensis* (V - BC Act)
- Large Bent-winged Bat - *Miniopterus orianae oceanensis* (V - BC Act)
- Diamond Firetail - *Stagonopleura guttata* (V - BC Act)
- Dusky Woodswallow - *Artamus cyanopterus* (V - BC Act)
- Scarlet Robin - *Petroica boodang* (V - BC Act)
- Gang-gang Cockatoo - *Callocephalon fimbriatum* (V - BC Act & E - EPBC Act)

A higher level of conservation significance is attributed to these species and impacts will be avoided and mitigated where possible. The project will likely impact known habitat for these species and as part of the BCAR process, the project will calculate and offset credits in accordance with the BOS where required.

A.4.2.3. Serious and Irreversible Impact Entity

Future development of the subject land would also need to consider whether the impacts result in a SAII to Monaro Tableland Cool Temperate Grassy Woodland, which has been identified as a candidate SAII entity within the Threatened Biodiversity Data Collection. When assessing impacts using Biodiversity Certification, a consent authority (i.e. DPE) can approve a proposal which is likely to have serious and irreversible impacts. The consent authority must take those impacts into consideration and determine whether there are any additional and appropriate measures that will minimise those impacts if approval is to be granted.

Principles for determining whether or not an impact is considered to be serious and irreversible include the following four principles (Clause 6.7 of the BC regulation):

- Will cause a further decline of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to be in a rapid rate of decline, or
- Will further reduce the population size of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to have a very small population size, or
- Impact on the habitat of a species or ecological community that is currently observed, estimated, inferred or reasonably suspected to have a very limited geographic distribution, or
- Impact on a species or ecological community that is unlikely to respond to measures to improve habitat and vegetation integrity and is therefore irreplaceable.

DPE can also determine that a proposed development is not considered to be an SAII. In order for this to occur, an assessment would be required within the BCAR that demonstrates that the development is not in conflict with any of the four principles (Clause 6.7 of the BC regulation) provided above. A map showing the extent of Monaro Tableland Cool Temperate Grassy Woodland within the subject land is provided in **Figure 6**.

A.4.2.4. Riparian Corridors

The subject land contains a riparian corridor represented by the unnamed 1st order watercourse in Precinct 2 (**Figure 1**). Riparian corridors consist of the following components (DPI 2018):

- The channel which comprises the bed and banks of the watercourse (to the highest bank); and
- The vegetated riparian zone (VRZ) adjoining the channel.

The width of the VRZ is required to be measured from the top of the highest bank on both sides of the watercourse (DPI 2018). As the watercourse is a 1st order stream, the VRZ is required to be 10 m either side of the top of bank.

The *Guidelines for controlled activities on waterfront land* (DPI 2018) permit developments to undertake non-riparian corridor works or development within the outer 50% of the VRZ if deemed suitable. Non-riparian uses, such as Asset Protection Zones (APZ) are allowed within the outer 50 per cent of the VRZ, so long as offsets are provided in accordance with the averaging rule (DPI 2018). Non-riparian corridor works or development is considered suitable for cleared land, where an averaging rule is applied to ensure no net reduction in corridor width. However developments that contain existing native vegetation along the riparian corridor should seek to maintain the required VRZ width in accordance with the minimum requirements.

This is a merit based assessment and the size and location of the VRZ could be amended in consultation with the NSW Natural Resources Access Regulator.

A.4.3. Avoidance and Mitigation

The BAM provides guidance for the development of avoidance and mitigation measures. Taking the ecological constraints into consideration, suitable avoidance and mitigation measures the subject land include:

- Avoidance:
    - Locating the development largely in areas dominated by grassland or areas previously subject to disturbance (i.e. cleared land);
    - Confining dense development to Precinct 1 where the least biodiversity values are present;
    - Opting for environmental zoning in Precincts 2 and 3 to restrict land uses resulting in further retention of biodiversity value;
    - Undertaking subdivision in Precincts 2 and 3 to produce relatively large lots (>2.63 ha) and placing building envelopes in areas of grassland where possible;
    - Locating the building envelopes to maximise the retention of the riparian corridor along the unnamed 1st order watercourse in Precinct 2;
    - Locating building envelopes to minimise impacts to EPBC Act listed TECs where possible where impacts to the community are largely within APZs;

- Shared access where possible included for dwellings in Precincts 2 and 3 to avoid unnecessary impacts from driveways;
- Create discrete APZs confined to a 40 m buffer surrounding building envelopes;

- Mitigation:
  - Demarcating clearing areas;
  - Installation of temporary fencing around significant environmental features, such as hollow-bearing trees and riparian areas;
  - Timing clearing works to minimise harm to fauna species;
  - Undertake pre-clearing surveys and clearance supervision to manage impacts to fauna species;
  - Hygiene protocols to prevent the spread of weeds; and
  - Creation of two Biodiversity Stewardship Sites within the subject land in attempt to offset impacts of the project using locally sourced biodiversity credits;
  - Residual vegetation and habitat within subdivided lots in Precincts 2 and 3 to be retained and protected under a Section 88E positive covenant registered over each lot external to the certification area;
  - Upon approval of the project, the proponent will prepare a Biodiversity Management Plan (BMP) for inclusion in the Section 88E to define conservation focussed management actions;
  - Staged development which will allow fauna to relocate into adjacent vegetation without assistance by using surrounding habitat connectivity to facilitate dispersal.

It should be noted that the above list of recommended mitigation measures will be further developed as part of the preparation of the BCAR.

A.5. Future Assessment Pathway

A.5.1. BC Act Requirements

During previous correspondence, BCD recommended the project be assessed using Biodiversity Certification for the areas of land proposed for development. Biodiversity impacts of standard biodiversity certification proposals are assessed using the BAM - the same method that is used to assess impacts for single sites under the Biodiversity Offsets Scheme (BOS). This ensures consistency of biodiversity outcomes within the planning system. This process requires a BCAR that is prepared in accordance with Stages 1 and 2 the BAM.

To date, Cumberland Ecology has consulted with BCD on numerous occasions in relation to the preparation of a BCAR. This included early and ongoing discussions to determine species credit species requiring further assessment and survey timing. Subsequent discussions have also been held to establish the certification area, Biodiversity Stewardship Sites and any avoidance measures required to set up a certification area (**Figure 7**).

This process has been running concurrently with the planning proposal and it is intended that the project will be assessed under the biodiversity certification process, with the finalised BCAR and public exhibition to occur prior to the approval of the planning proposal.

Standard biodiversity certification proposals must also offset biodiversity impacts by retiring biodiversity credits. At this stage, two Biodiversity Stewardship Sites are proposed for the subject land to work towards offsetting the development using local biodiversity credits. It is the intention of the project to offset any development within the subject land using credits produced by the onsite stewardship sites. Any additional offset obligations may also be met by making a payment into the Biodiversity Conservation Fund.

A.5.1.1. Offsetting Requirements

Offsetting requirements under the BOS will be an important part of the project moving forward to ensure that there is an acceptable and sustainable ecological outcome. As such, the following section describes in detail the process that will be undertaken for offsetting impacts to biodiversity values in the preparation for the BCAR.

Specifically, the BOS provides a framework to avoid, minimise and offset impacts on biodiversity from development and clearing, and to ensure land that is used to offset impacts is secured in-perpetuity. Developers and landholders who undertake development or clearing, generating a credit obligation that must be retired to offset their activity following approval by the consent authority. Under the BAM, there are two types of credits on development sites:

- Ecosystem credits, which measure the offset requirement for impacts on threatened ecological communities, threatened species habitat for species that can be reliably predicted to occur with a plant community type, and other plant community types generally; and
- Species credits, which measure the offset requirement for impacts on threatened species individuals or area of habitat.

Once the consent authority has issued the approval or consent that includes the final credit obligation of ecosystem and/or species credits, the obligation can be satisfied as follows:

- The retirement of the required number and class of like-for-like biodiversity credits;
- The retirement of the required biodiversity credits in accordance with the variation rules;
- The funding of a biodiversity conservation action that would benefit the relevant threatened species or ecological community and that is equivalent to the cost of acquiring the required like-for-like biodiversity credits as determined by the offsets payment calculator referred to in Section 6.32 of the BC Act; and
- The payment under section 6.30 of the BC Act of an amount into the Biodiversity Conservation Fund determined in accordance with the offsets payment calculator to satisfy the requirement to retire biodiversity credits.

A.5.2. EPBC Act Requirements

Threatened species, populations and communities listed under the EPBC Act that are considered to be directly or indirectly impacted by the proposed development should be assessed in accordance with the *Matters of*

National Environmental Significance Significant Impact Guidelines 1.1 (DoE 2013). If a development is considered to significantly impact any MNES, then a referral would be required to be submitted.

The following threatened entities listed under the EPBC Act were recorded within the subject land:

- Natural Temperate Grassland of the Southern Tablelands of NSW and the Australian Capital Territory ecology (Zone 5);
- *Dodonaea procumbens* (Creeping Hop Bush) – Vulnerable; and
- Gang-gang Cockatoo *(Callocephalon fimbriatum)* – Endangered.

At this early stage of the project, Cumberland Ecology has had no communication with the Commonwealth Department of Agriculture, Water and the Environment regarding a referral to assess potential impacts to EPBC Act listed entities. . An assessment will be undertaken to determine if the project requires referral to the commonwealth. Due to the minor nature of the impacts to EPBC Act listed entities, it is unlikely that a referral would result in a Controlled Action.

A.5.3. Other Relevant Legislation

With the exception of the BC Act and EPBC Act, other relevant legislation, plans and guidelines will also be considered during the assessment process. This includes:

- NSW *Environmental Planning and Assessment Act 1979*;
- NSW *Water Management Act 2000*;
- State Environmental Planning Policy (Biodiversity and Conservation SEPP) 2021; and
- Snowy Monaro Regional Council Provisions;
    - Terrestrial Biodiversity Mapping,
    - Riparian Land and Watercourses,
    - Wetlands,
    - Snowy River Development Control Plan 2013.

A.6. References

Costin, A. 1954. A study of the ecosystems of the Monaro region with special reference to soil erosion.

DoE. 2013. Matters of National Environmental Significance. Significant impact guidelines 1.1. *Environment Protection and Biodiversity Conservation Act 1999*. Department of the Environment, Canberra.

DPE. 2022. NSW State Vegetation Type Map.

DPI. 2018. Guidelines for controlled activities on waterfront land — Riparian corridors. NSW Department of Primary Industries (DPI), Office of Water.

Google Earth. 2023. Imagery Date - 2018-2020.

NSW Government Spatial Services. 2023. Historical Imagery Viewer.

FIGURES

Legend

- Subject Land
- Cadastre

Watercourses

- 1st Order Stream
- 2nd Order Stream
- 3rd Order Stream

Data Source:
NSW Government Spatial Services
SIX Maps 'Clip and Ship'
Snow Monaro Regional LGA

Coordinate System: MGA Zone 56 (GDA 94)

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0 50 100 150 200 m

I:\...\21258\Figures\Letter 5\20230328\Figure 1. Location

Figure 1. Location of the subject land

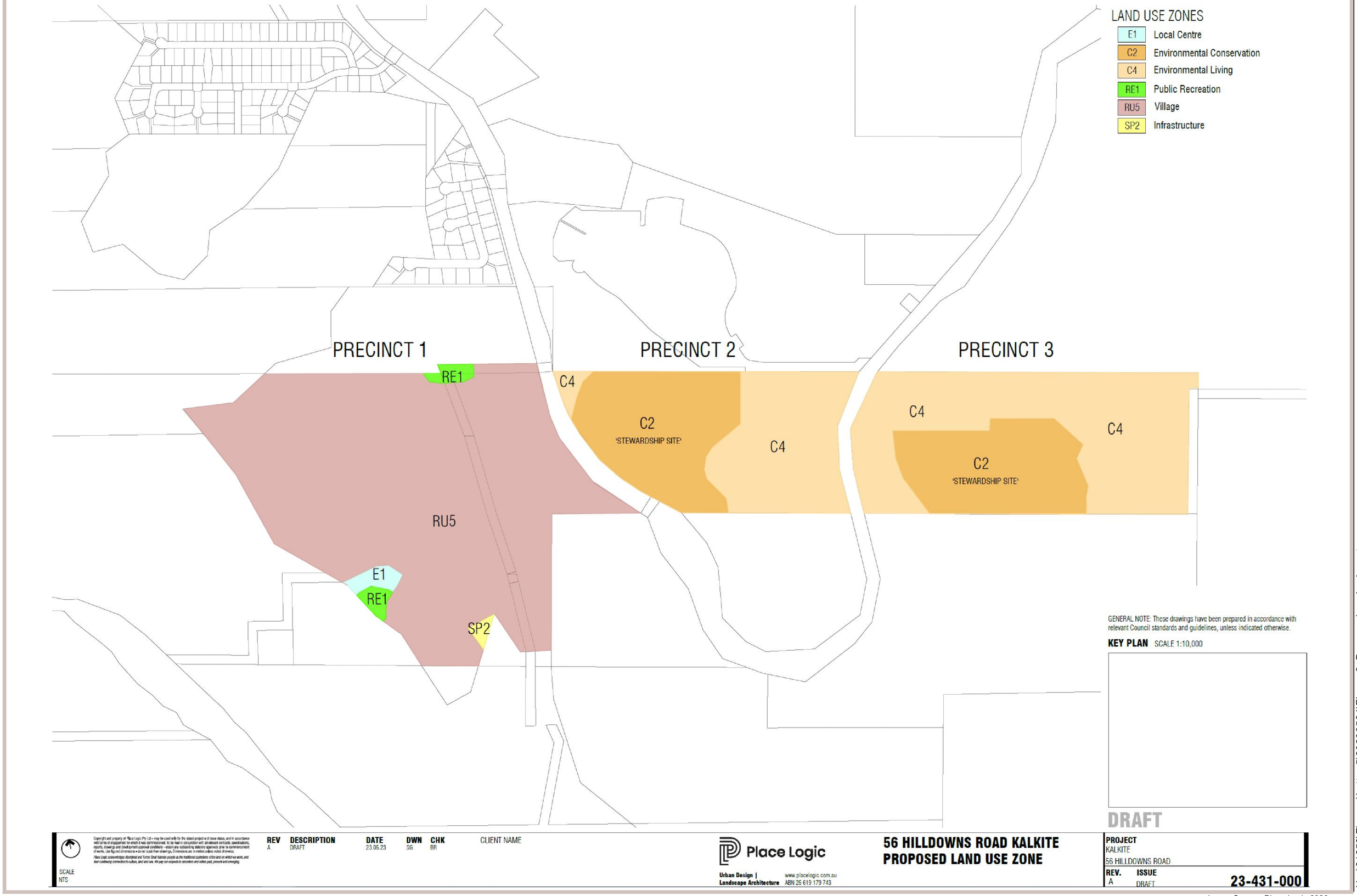

Figure 2. Proposed zoning layout

Image Source: Place Logic 2023

I:\...\21258\Figures\Letter 5\20230524\Figure 2. Proposed zoning layout

Legend

- Subject Land

Flora Survey Locations

- Threatened Flora Transects
- BAM Plot Survey Tracks
- BAM Plot Locations

Plant Community Type

- Zone 1: PCT 3341
- Zone 2: PCT 3341
- Zone 3: PCT 3341
- Zone 4: PCT 3742
- Zone 5: PCT 3413
- Zone 6: PCT 3413
- Exotic Woody Vegetation
- Exotic Grassland
- Cleared Land

Data Source:
NSW Government Spatial Services
SIX Maps 'Clip and Ship'
Snow Monaro Regional LGA

Coordinate System: MGA Zone 56 (GDA 94)

cumberland ecology

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I:\...\21258\Figures\Letter 5\20230328\Figure 3. Flora survey locations

Figure 3. Flora survey locations

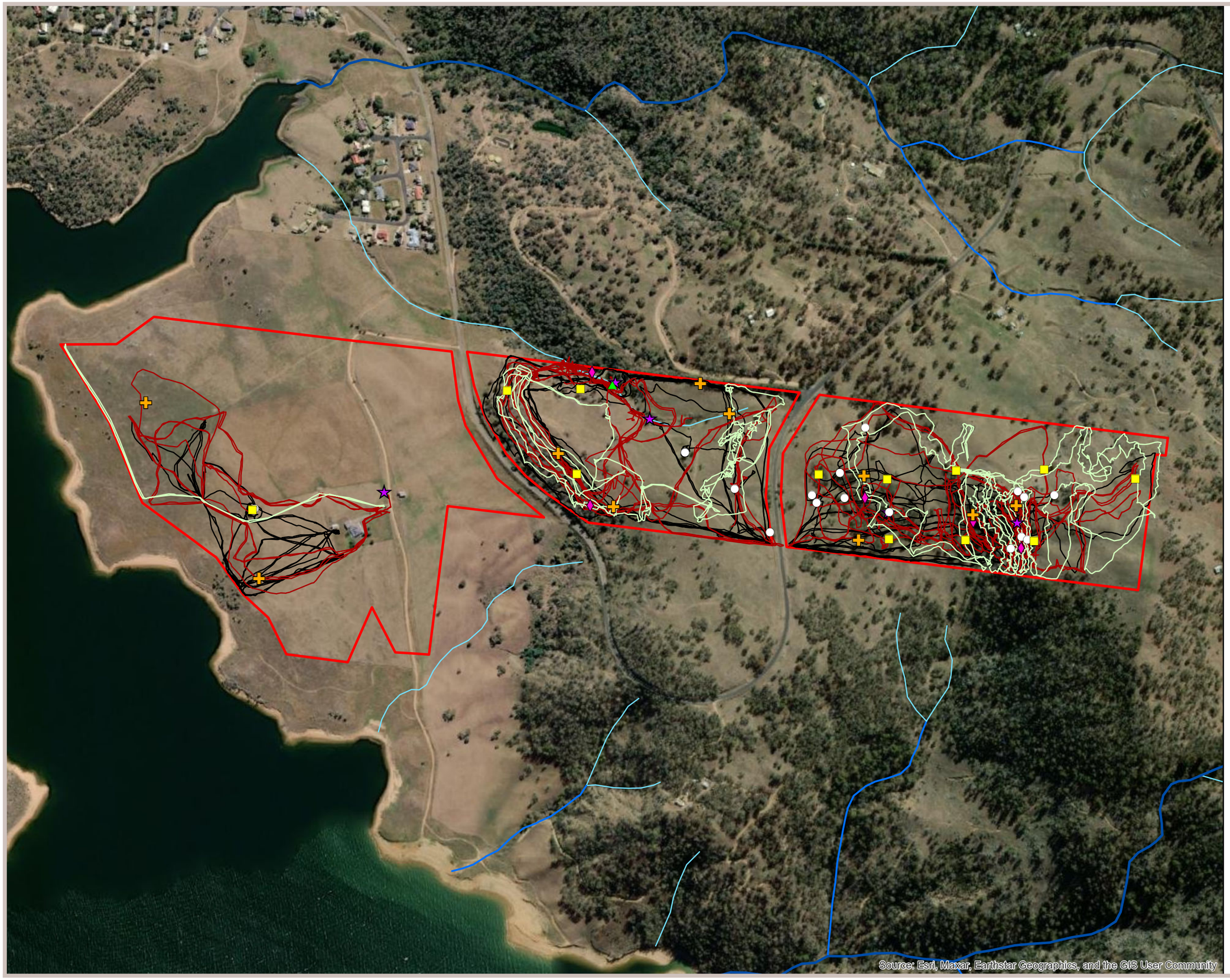

Figure 4. Flora survey locations

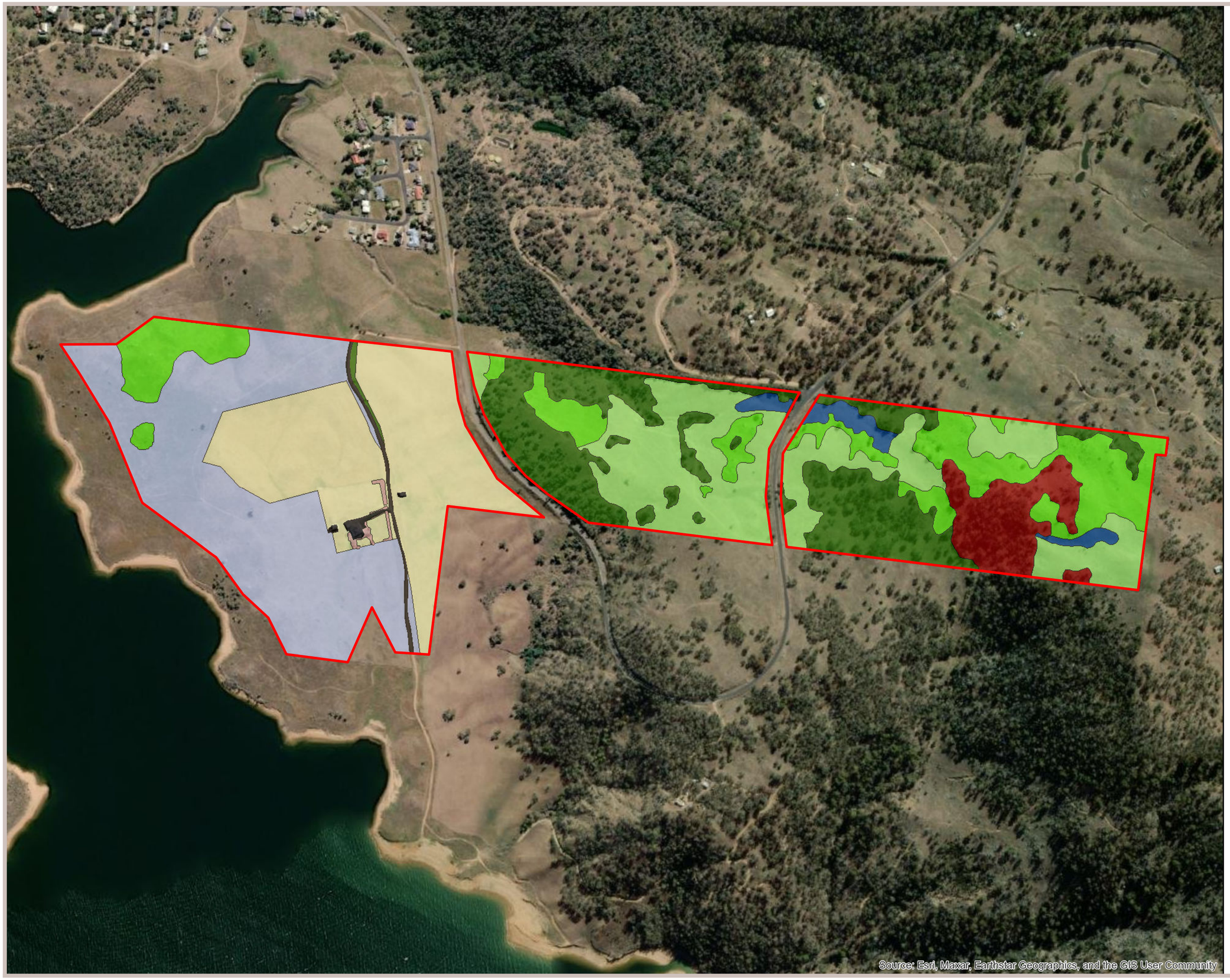

Figure 5. Plant Community Types

Legend

Subject Land

Threatened Ecological Community

Monaro Tableland Cool Temperate Grassy Woodland (BC Act)

Natural Temperate Grassland of the Southern Tablelands of NSW and the Australian Capital Territory ecology (EPBC Act)

Threatened Flora Records

Swainsona sericea

Dodonaea procumbens (Creeping Hop Bush)

Threatened Fauna Records

Eastern False Pipistrelle

Large Bent-winged Bat

Scarlet Robin

Gang-gang Cockatoo

Dusky Woodswallow

Diamond Firetail

Data Source:
NSW Government Spatial Services
SIX Maps 'Clip and Ship'
Snow Monaro Regional LGA

Coordinate System: MGA Zone 56 (GDA 94)

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Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

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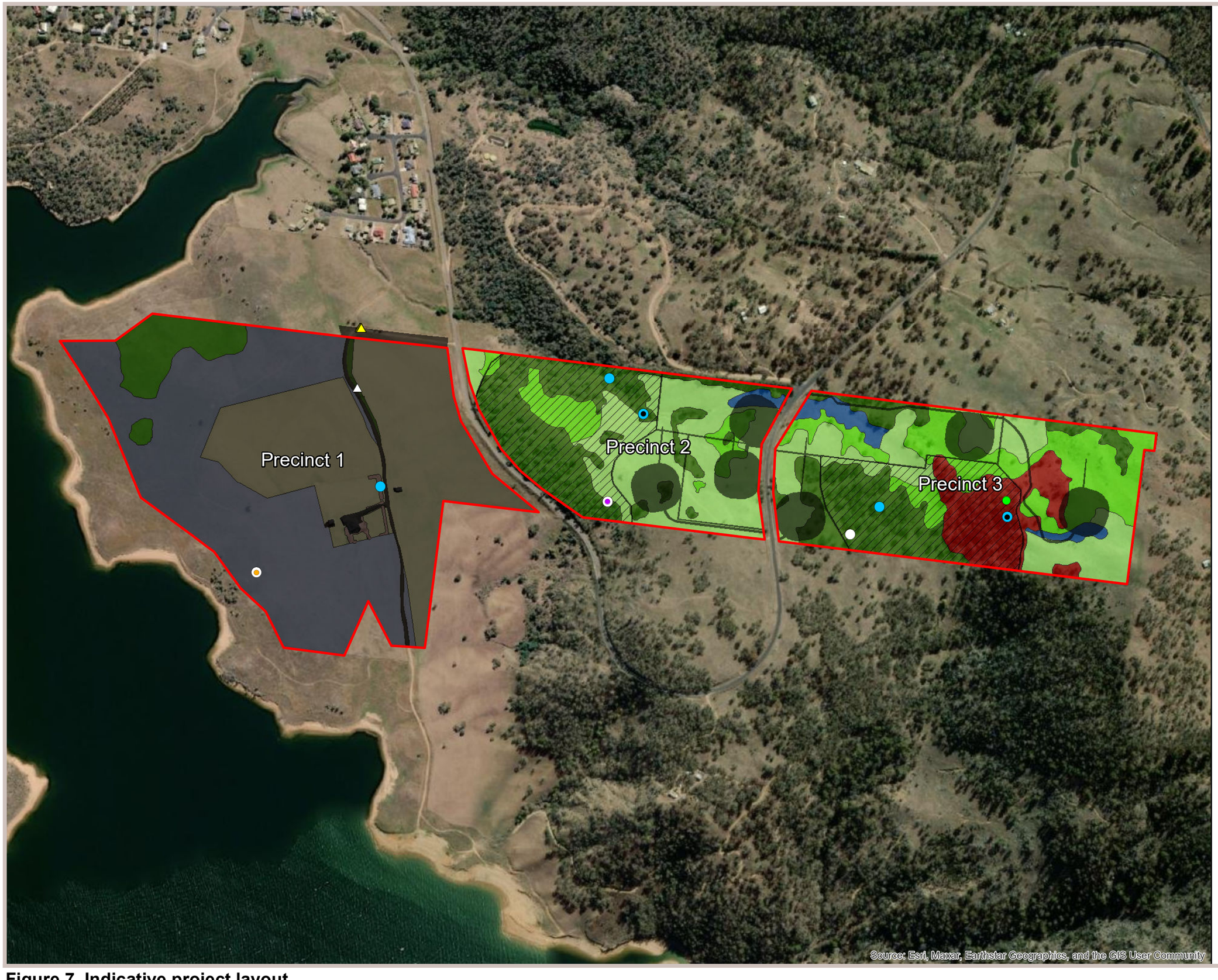
I:\...\21258\Figures\Letter 5\20230328\Figure 6. Threatened Ecological Communities and Threatened Flora Records

Figure 6. Threatened Ecological Communities and Threatened Species Records



Legend

- Subject Land

Indicative Project Layout

- Proposed Certification Area
- Proposed Stewardship Sites

Plant Community Type

- Zone 1: PCT 3341
- Zone 2: PCT 3341
- Zone 3: PCT 3341
- Zone 4: PCT 3742
- Zone 5: PCT 3413
- Zone 6: PCT 3413
- Exotic Woody Vegetation
- Exotic Grassland (Improved Pasture)
- Cleared Land

Threatened Flora Records

- Swainsona sericea
- Dodonaea procumbens (Creeping Hop Bush)

Threatened Fauna Records

- Eastern False Pipistrelle
- Large Bent-winged Bat
- Scarlet Robin
- Gang-gang Cockatoo
- Dusky Woodswallow
- Diamond Firetail

Data Source:
NSW Government Spatial Services
SIX Maps 'Clip and Ship'
Snow Monaro Regional LGA

Coordinate System: MGA Zone 56 (GDA 94)

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I:\...\21258\Figures\Letter 5\20230524\Figure 7. Indicative project layout

Figure 7. Indicative project layout