Ms Jou Jong
ITP Development
Project Manager – Planning
PO Box 6127
O'Connor, ACT 2602

By email on 13/12/23 to jjong@itpd.com.au

Re: Biodiversity inspection report – Quirindi 1B 5MW Solar Farm, Borah Creek Road, Quirindi, NSW 2343

Dear Jou,

Thank-you for the opportunity to assist with the project. Please be advised that in this engagement, I am assuming the role of your Ecological Consultant and Biodiversity Assessment Method (BAM) Accredited Assessor. I confirm that I am listed on the Biodiversity Assessment Method (BAM) Accredited Person database (BAAS18081).

1. Anticipated impacts

Red-Gum has been engaged to assess the likely ecological impacts to the receiving environment assuming the construction of a solar farm at the listed address. Red-Gum has assumed that all impacts associated with the works are confined to the development boundary. This assessment herein is a desk-top assessment of the likely environs at site and documents the condition of the site at the time of initial inspection (11/09/23).

Following review of the construction method (and consultation with the client) the construction footprint and associated losses were deduced acknowledging the following key points:

- The solar farm will be installed with a 2m high array system, where the arrays are spaced approximately 5-6m apart (to prevent shading at start and end of day). The wide distance apart significantly reduces the amount of shade impacting the areas between the panels.
- There are no anticipated vegetation losses along proposed fences or for fire breaks as the entire property will be under a cultivation regime (not dis-similar to how the site is already being managed).

In summary, there will be some inter-row shading in the early morning and late afternoon, however, the 'agrivoltaic' industry is expanding worldwide based on the principles of integrating agriculture (grazing) and solar PV projects which, like this project, are essentially designed to take advantage of continued vegetation (grass) cover beneath the panels.

For this reason, total and complete loss of vegetation within the site bounds is not likely, rather, the anticipated losses have been minimised to that which will be damaged during construction.

2. Assessing Biodiversity Impacts

This Biodiversity Inspection Report (BIR) is a desktop and preliminary site assessment of the selected study area, at a particular point in time. The primary aim is to assess the likely impacts of the development with consideration to (where at all possible) avoiding entry into the NSW Biodiversity Offsets Scheme (BOS) by ensuring the development adheres to the 'avoid, minimise, offset' hierarchy. Using the hierarchy, the BIR process attempts to ensure that the proponent first considers whether the development can avoid a negative impact on the environment; Secondly, consider whether the development can minimise any negative impacts that cannot be avoided; and Lastly, once all reasonable steps to avoid or minimise environmental impacts have been exhausted, consider whether any remaining impacts can be offset.

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The later of the three hierarchy tiers will require further assessment via either a Test of Significance (ToS) or Biodiversity Development Assessment Report (BDAR) to fully consider the developments likely impact on threatened species, ecological communities and their habitats. This level assessment may make many projects unfeasible.

A ToS is an assessment referring to the factors that must be considered by decision makers to assess whether a proposal is likely to have a significant effect on threatened biodiversity as per section 7.3 of the *Biodiversity Conservation Act 2016* (BC Act). The ToS is used to assess if a development or activity is likely to significantly affect threatened species or ecological communities, or their habitats and is applied as part of the BOS entry requirements and for Part 4 activities under the *Environmental Planning and Assessment Act 1979* (OEH, 2018). It is important to note that a ToS will ONLY need to be applied where the proposal:

1. Does **NOT** significantly affect threatened species or ecological communities or their habitats; or
2. Is **NOT** affecting a declared area of outstanding biodiversity value; or
3. Is **NOT** affecting an area on the *Biodiversity Values Map*; or
4. Does **NOT** exceed the biodiversity offsets scheme (BOS) clearing threshold for the sites 'minimum lot size'.

If clearing and other impacts exceeds either trigger, the Biodiversity Offset Scheme (BOS) applies to the proposed development including biodiversity impacts prescribed by clause 6.1 of the Biodiversity Regulation 2017. The area threshold applies to all proposed native vegetation clearing associated with a proposal, regardless of whether this clearing is across multiple lots.

The area threshold varies depending on the minimum lot size (shown in the Lot Size Maps made under the relevant Local Environmental Plan (LEP) or actual lot size (where there is no minimum lot size provided for the relevant land under the LEP) according to the table below:

Minimum lot size associated with the property	Threshold for clearing, above which the BAM and offsets scheme apply
Less than 1 ha	0.25 ha or more
1 ha to less than 40 ha	0.5 ha or more
40 ha to less than 1000 ha	1 ha or more
1,000 ha or more	2 ha or more

For this proposal, the minimum lot size associated with the property (sites) is the '40 ha to less than 1,000 ha' category, meaning that the maximum threshold for clearing (applied to each site individually) in this case is **1 ha**.

Where the development **IS** determined as being likely to impact a threatened species or ecological communities or their habitats, **OR** is within a declared area of outstanding biodiversity value or any area on the Biodiversity Values Map, **OR** exceeds the BOS threshold, then a BDAR is required.

*The study site is **UNLIKELY** to affect threatened species, ecological communities or their habitats (**Section 9**), is **NOT** in an area of Outstanding Biodiversity Value or mapped on the Biodiversity Values Map (**Attachment 4**) and as at the time of this assessment, the on-ground impacts associated with the proposal will **NOT** exceed the allowable 1 ha clearing threshold.*

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3. Plant Community Type (PCT) mapping

Database searches concluded that the likely Plant Community Types (PCT) adjacent to the area is PCT 433 (White Box grassy woodland to open woodland on basalt flats and rises in the Liverpool Plains subregion, BSS Bioregion). 594 (Silver-leaved Ironbark – White Cypress Pine shrubby open forest of Bringalow Belt South Bioregion and Nandewar Bioregion), 589 (White Box- White Cypress Pine – Silver-leaved Ironbark grassy woodland on mainly clay loam soils on hills mainly in the Nandewar Bioregion) and PCT 599 (Blakely's Reg Gum – Yellow Box grassy tall woodland on flats and hills in the Brigalow Belt South Bioregion and Nandewar Bioregion) are also present around the area but are unlikely to be impacted by the project. Aerial photography confirmed that as of at least 2015 the entire site is largely cleared of native shrubs and trees. It is evident that cropping covers at least 95% of the development area making it highly unlikely that any native grasses persist. Aerial imagery also confirms that majority of the surrounding area has also been cleared of native vegetation and is highly modified to some degree, indicating that any native vegetation still present is potentially part of a derived PCT or not representative.

PCT 433 is a tall to mid-high open woodland dominated by White Box (*Eucalyptus albens*) and occasionally Kurrajong (*Brachychiton populeneus subsp. populeneus*) and Weeping Myall (*Acacia pendula*). Shrubs are very sparse or absent including species such as *Sclerolaena birchii*, *Scleroaena muricata var. muricata* or *Acacia implexa*. Dense ground cover of grasses and forbs, grass species include *Austrostipa aristiglumis*, *Austrodanthonia bipartita*, *Dichanthium sericeum subsp. sericeu*m, *Themeda avenacea*, *Austrostipa bigeniculata*, *Enteropogon acicularis*, *Chloris ventricosa*, *Bothriochloa decipiens*, *Bothriochloa macra*, *Elymus scaber* and *Panicum buncei*. Some annual exotic species such as Rye Grass (*Lolium spp.*) and Wild Oats (*Avena spp*.) can dominate cover in Spring then die off leaving native perennial grasses as dominants. The ground cover varies with land use history with shrubs remaining predominantly absent or rare.

4. The Transitional Native Vegetation Regulatory (NVR) Map Tool

The transitional Native Vegetation Regulatory map categorizes land to determine native vegetation management options for landholders. The transitional Native Vegetation Regulatory (NVR) Map tool can be used by landholders to display the most critical land categories, at a property scale, during the transitional period. It essentially tells you where the land management code and allowable activities are either limited or not available. The transitional NVR Map tool currently displays the following categories:'

- **Excluded land** = is managed outside the land management framework. Other clearing controls may exist in these areas.
- **Category 1** Exempt Land = Native vegetation clearing is allowed without approval from Local Land Services.
- **Category 2** Regulated land = Authorization may be required from Local Land Services for native vegetation clearing. This may include clearing under the Land Management (Native Vegetation) Code 2018. Landholders also have a range of allowable clearing activities available to them for use without approval from Local Land Services.
- **Category 2** Vulnerable regulated land = Designated as steep or highly erodible lands, protected riparian land or special category land. Use of the Land Management (Native Vegetation) Code 2018 and allowable clearing activities are restricted in these areas.
- **Category 2** Sensitive regulated land = Designated as environmentally sensitive. Clearing under the Land Management (Native Vegetation) Code 2018 is not permitted in these areas, although there is a limited list of allowable clearing activities available.

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*The Transitional Native Vegetation Regulatory map show the site as having no critical land category during the transitional period (**Attachment 5**). Information regarding the land management code and allowable activities for the Activity area are therefore, not available or accessible to the public.*

5. EPBC Protected Matters Online Search Tool

Consultation with the EPBC Protected Matters Online Search Tool searched a 5km radius of the site area for threatened ***Flora*** and ***Vegetation Communities*** returning 11 threatened species and 5 threatened communities. Of which there were 3 Critically Endangered and 2 Endangered species whose habitat may occur within that specified geographic range. **Table 1** considers their likelihood of occurring in the proposed site. Consultation with the same online database for threatened ***Fauna*** in the same geographic range returned 19 Vulnerable, 10 Migratory, 7 Endangered and 3 Critically Endangered species. **Table 2** considers their likelihood of occurring in the proposed site.

6. NSW BioNet (The Atlas of NSW Wildlife)

Consultation with NSW BioNet (The Atlas of NSW Wildlife) for listed ***Flora*** considered threatened in NSW, returned 2 Endangered species recorded within 10km by 10km radius of the site (**Map 1**). These species were not recorded on site during the inspection period and are considered unlikely to be present due to a lack of suitable habitat and structure. Consultation with the same online database for threatened ***Fauna*** in the same geographic range returned 28 species records, 25 Vulnerable and 3 Endangered. **Table 3** considers their likelihood of occurring in the proposed site.

7. Biodiversity Values Map and Threshold Tool

The Biodiversity Offsets Scheme Threshold (BOSET) is a test used to determine when is necessary to engage an accredited assessor to apply the Biodiversity Assessment Method (the BAM) to assess the impacts of a proposal. A search conducted on 2/11/23 revealed that the project site does not intersect any areas mapped as possessing 'Biodiversity Values' (**Attachment 4**).

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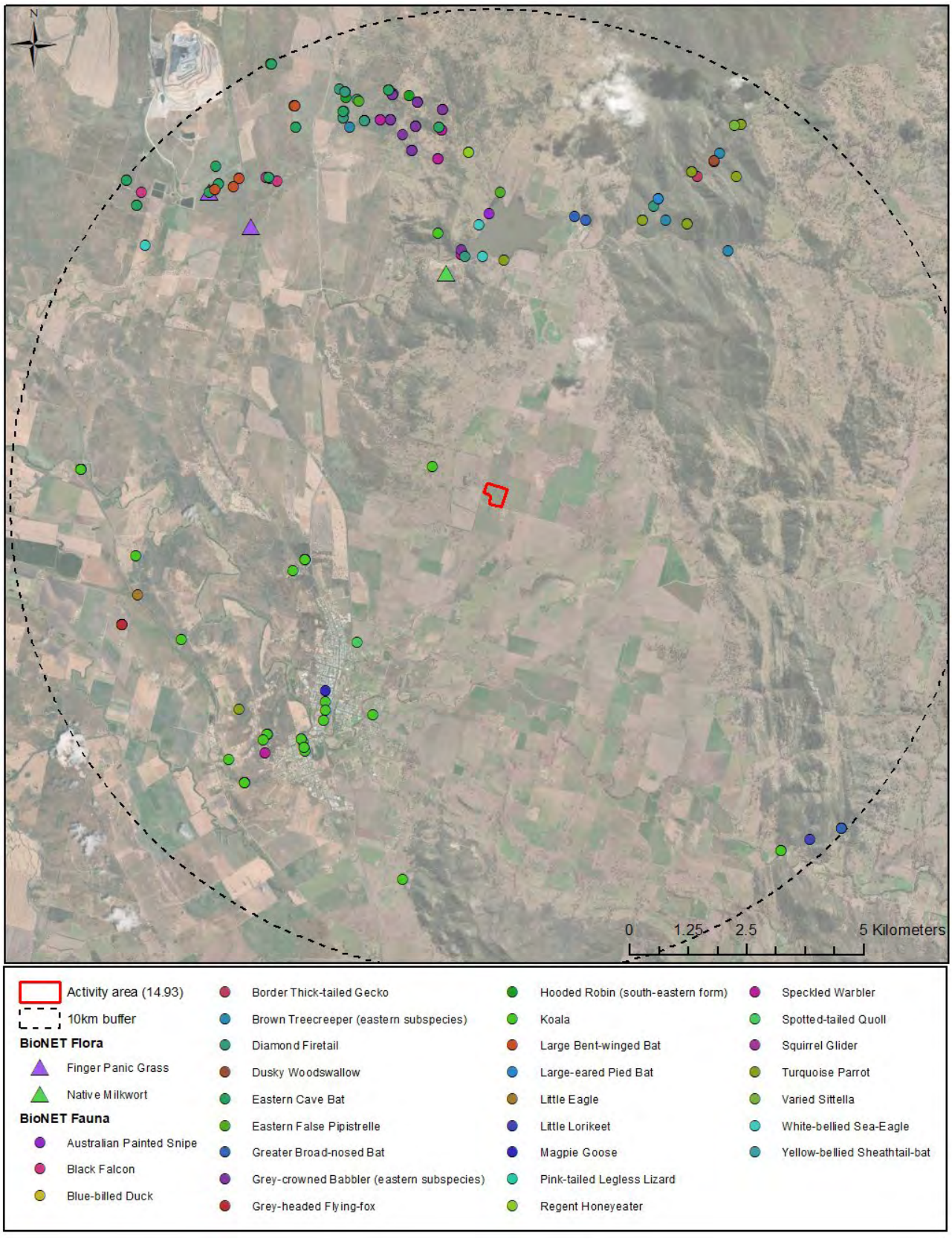

Map 1: Recorded threatened species, NSW BioNET. Data download, 1/11/2023

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8. Koala Assessment

In 2018, the then Office of Environment & Heritage (now DPIE) produced *'A review of koala tree use across New South Wales'* which assessed evidence of koala tree use, for whatever purpose, across New South Wales. The study was intended as a platform to inform the predictive modelling of koala tree species and to contribute to a koala habitat suitability information base and importantly, the data collected for the seven (7) Koala Management Areas (KMAs) (after Phillips 2000 & DECC 2008) 'allows for a bottom-up consideration of a fundamental driver of koala habitat selection – local tree use patterns and tree associations' (OEH, 2018).

The assessment site at Quirindi is in the Western Slopes and Plains KMA in which the study identified 9 tree species regularly used by Koalas, including 8 eucalypts (13 species used of 46 with >9 BioNet VIS records) and one (1) non-eucalypt. All eucalypts used were from the *Symphyomyrtus* sub-genus (Trees or mallees; bark smooth, excorticating in small or large flakes or ribbons, or persistent, shortly fibrous-flaky, fibrous, or shortly fibrous and heavily impregnated with kino).

Pre-inspection database searches revealed sixty-eight (68) sightings of Koala (*Phascolarctos cinereus*) within a 10km buffer of the site, with the closest being 1.2 km west, adjacent to a more connected patch on the outskirts of a large heavily wooded area (**Map 2**). It is entirely feasible that Koalas could be using several vegetated sections around the area, including riparian corridors along Quirindi Creek and heavily wooded areas east of the Kamilaroi Highway. However, there have been no records within close proximity of assessment site which has been cleared of all native vegetation that could provide any habitat or foraging opportunities for Koalas.

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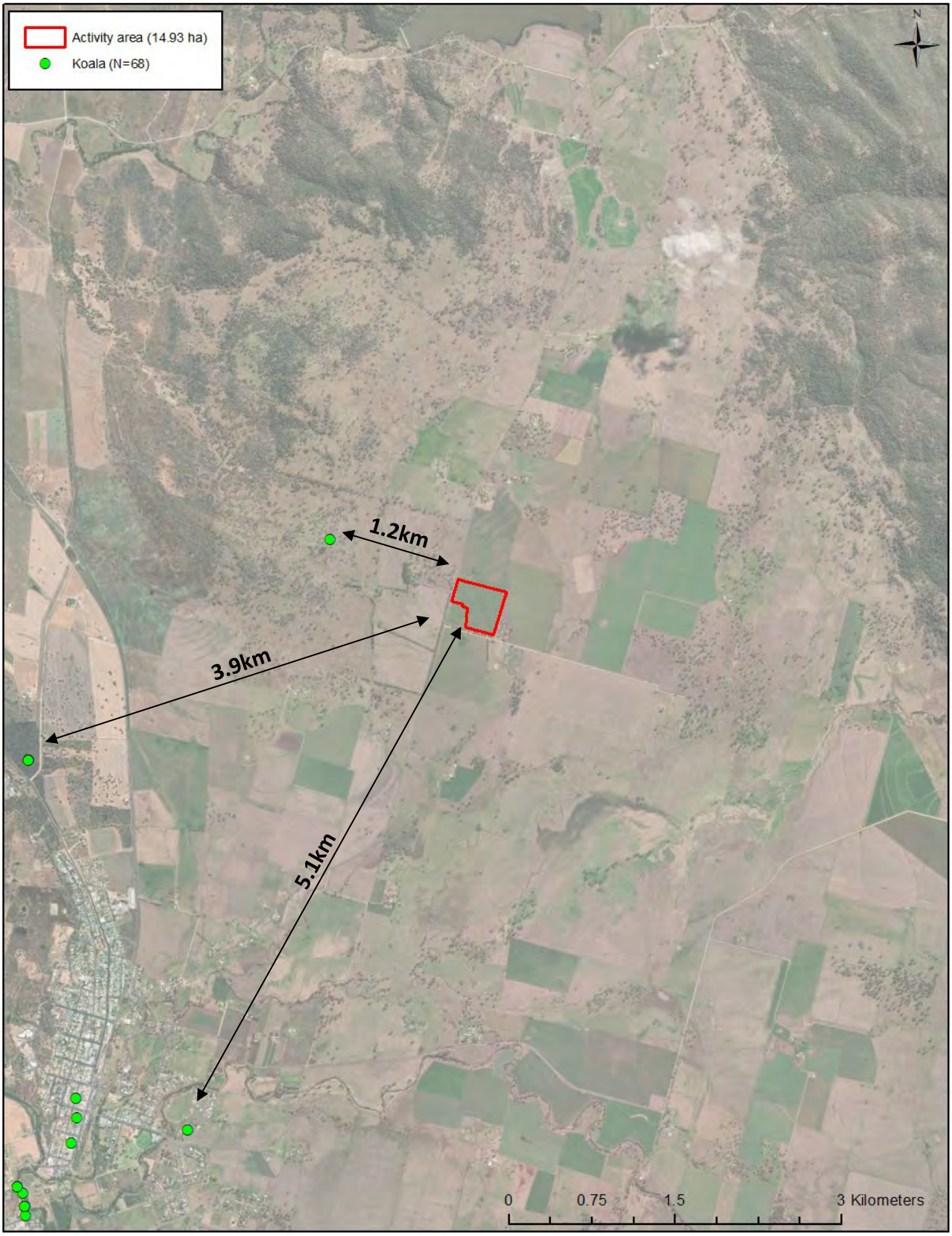

Map 2: Nearest Recorded Koala sighting, NSW BioNET. Data download, 1/11/2023

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9. Site inspection

Site inspection on 11/09/2023 was conducted at midday, conditions were clear and 16°C. The designated 'clear zone' was thoroughly inspected in accordance with *Guide 1: Pre-clearing process of the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects (RTA 2011)*. The following observations were made at the time of inspection:

1. If any threatened native fauna (birds) are present in the surrounding connected native vegetation (in particular Superb Parrot, Grey-crowned Babbler & the Little Eagle) they were not recorded during the survey on the loss site on 11/09/2023. The nesting period for these species was open at the time of the survey, meaning they were absent and not utilizing the site for breeding, therefore the possibility of harming a fledgling is unlikely.
2. The site is a highly modified paddock with no native groundcovers present and an obvious history of clearing, pastoralism and cultivation;
3. The entire site is a cleared cropping paddock dominated by planted exotics, with three scattered remnant White Box (*Eucalyptus albens*) trees that possess little habitat value, considering their distance from more connected vegetation and the presence of more heavily wooded vegetation surrounding the area. (**Map 3**);
4. Disturbance of the remnant native trees will be classified as native vegetation losses and require the need for further assessment under the Biodiversity Conservation Act 2017 should the clearing threshold be exceeded for the 'Minimum Lot Size', which is currently 200 Ha. **That is, any loss of >1 ha of native vegetation will trigger the need for some form of a Biodiversity Assessment Report (BAR) and possibly entry into the Biodiversity Offset Scheme (BOS) to account for the losses.**
5. No threatened species, scats or other evidence of the use of this zone or the development site were recorded during the survey effort.
6. No Koalas, scats or other evidence of use of this zone or the development site were recorded during the survey effort.

10. Summary of Findings

Red-Gum contends that the site is dominated by exotic planted crop and pasture grasses which have little to no value to threatened fauna and threatened flora are not present in these previously cultivated areas. The works area also closely neighbours three (3) native remnant White Box (*E. albens*) trees of which are to be retained. If the development extends beyond the exotic mapped groundcovers in **Map 3**, then impact to these areas should be kept below the allowable clearing thresholds or the Biodiversity Conservation Act 2016 provisions will come into play and further assessment will be required.

The proposed activities are unlikely to have an adverse effect on the foraging ability or the life cycle of threatened species that may be opportunistically using the site or surrounding areas and all works remain under the 1 ha clearing threshold for the site.

This project is unlikely to displace any rare or threatened species. However, it is a possibility that a number of threatened and declining bird species and Koalas may be using the wooded corridor bordering the south of the site and other surrounding heavily wooded areas. Hence the construction activities may prove to disturb foraging activities for a short period. The Superb Parrot, Grey-crowned Babbler & Little Eagle are three species that are likely to be using habitats in the vicinity, and potentially the fringe areas of the assessment site. The assessment extended to the access track entering the property and to the site. The road is a formed track with little to no work required to make it passable for heavy machinery, therefore no native vegetation losses are anticipated in this zone.

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Map 3: Mapped vegetation cover

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The area assessed was largely exotic species, planted crop and pasture grasses, with many species commonly regarded as 'highly invasive' in more natural woodland settings. While the proposed works are unlikely to introduce noxious weeds, vermin, feral species or genetically modified organisms into an area, the movement of vehicles, plant, equipment and people on and off the subject site has the potential to introduce such impacts. Wherever possible, the removal of weeds should be undertaken prior to seed developing, which for most species occurs during the warmer months (i.e. summer).

The typical home ranges of Koalas are from 2 ha of connected vegetation to hundreds of hectares. Koalas feed almost exclusively on a few preferred tree species which are generally divided or ranked as either primary and secondary in importance. The occurrence of both primary and secondary tree species varies widely on a regional, local and even a seasonal basis, meaning that koalas are unevenly distributed across their range.

In the surrounding area, primary food tree species are River red gum (*E. camaldulensis*) and Coolabah (*E. coolabah*) with secondary food tree species including Dirty (or Baradine) gum (*E. chloroclada*), Blakely's red gum (*E. blakelyi*), E. camaldulensis, Poplar or Bimble box (*E. populnea*), white box (*E. albens*), and *Callitris glaucophylla*. Minimal viable food sources are present in the development area and importantly, there are numerous core vegetation areas surrounding the site which represent areas of viable Koala habitat. The three (3) remnant White Box trees adjacent to the works area are all scattered, not in close proximity to connected vegetation and therefore, possess little habitat value to Koalas. The site is highly unlikely to be traversed or used by the species who are much more likely to stay within the connected canopy of roadside vegetation corridors and more heavily wooded areas.

I am of the opinion that the activities as proposed will not see the loss of >1 ha of native vegetation. The development is therefore unlikely to have a significant effect on any threatened species and ecological communities and/or their conservation, provided that the three White Box identified to be retained in ***Map 3*** *are avoided by the development.*

11. Recommendations

By way of a clearing process that minimizes the risk to threatened species that may be opportunistically using the site, I recommend:

- **I.** Construction limits and exclusion zones clearly identified prior to work;
- **II.** A visual inspection is conducted by environmental staff before construction commences to identify any areas of the site that might be supporting native fauna;
- **III.** Vehicle movements around the site will be restricted to the construction footprint and away from any existing native trees bordering the site with flagging exclusion fencing to be installed.
- **IV.** Soil disturbance by vehicle and pedestrian access is to be kept to a minimum outside the construction footprint.
- **V.** Any weeds removed (particularly those bearing seeds) are to be disposed of appropriately at the nearest waste management facility.

Regards

Mr Damian Wall
Managing Director
BAppSc, MEnvMgt, GradCert CHM, MAACAI

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Attachment 1: Database Search Results v Likelihood Tables

[1] Five categories for the 'likelihood of occurrence' of species has been used. The categories are based on recorded sightings listed in credible databases, the presence or absence of suitable habitat, other features of the site, results of the field survey and professional judgement. The 5 categories are:

'Yes' The species/community was or has been observed on the site.
'Likely' A medium to High probability that a species uses the site
'Potential' A suitable habitat for a species occurs on the site, but there is insufficient information to categorise the species as 'likely' or 'unlikely' to occur.
'Unlikely' A Very Low to Low probability that a species uses the site.
'No' Habitat on the site and in the vicinity in unsuitable for the species.

Table 1: EPBC Protected Matters Database results – Flora (5km x 5km)

Species	Preferred Habitat	EPBC Act Status	Likelihood[1]
White Box-Yellow Box Blakely's Red-Gum Grassy Woodland and Derived Native Grassland		Critically Endangered	No
Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia		Endangered	No
New England Peppermint (Eucalyptus nova-anglica) Grassy Woodlands		Critically Endangered	No
Natural grasslands on basalt and fine-textured alluvial plains of northern NSW and Southern Queensland.		Critically Endangered	No
Weeping Myall Woodlands		Endangered	No
Eucalyptus nicholii – Narrow-leaved Peppermint	Grows in grassy dry woodland, on shallow soils of slopes and ridges. Found mainly on infertile soils derived from granite and metasedimentary rocks.	Vulnerable	No
Cadellia pentastylis - Ooline	Strong correlation between the presence of Ooline and low- to medium-nutrient soils of sandy clay or clayey consistencies	Vulnerable	No
Dichanthium setosum - Bluegrass	Disturbed areas such as cleared woodland, grassy roadside remnants and highly disturbed pasture.	Vulnerable	Unlikely – Site has been cultivated
Androcalva procumbens	Grows in sandy sites, often along roadsides.	Vulnerable	No
Tylophora linearis	Grows in dry scrub and open forest.	Endangered	No
Prasophyllum sp. Wybong – a leek-orchid	Open eucalypt woodland and grassland.	Critically Endangered	No
Thesium australe – Austral Toadflax	Grassy woodlands away from the coast and grasslands on coastal headlands.	Vulnerable	No
Lepidium aschersonii – Spiny Pepper-cress	Ridges of gilgai clay dominated by Grey Box, Buloke and Brigalow.	Vulnerable	No
Lepidium monoplocoides – Winged Pepper-cress	Moist/waterlogged areas, heavy fertile soils, average annual rainfall between 300-500mm. Open woodland dominated by Bulloak, Black Box po Poplar Box.	Endangered	No
Euphrasia arguta	On the grassy and open forest country surrounding Bathurst in sub humid places and in meadows near rivers.	Critically Endangered	No
Pomaderris brunnea – Rufous Pomaderris	Moist woodland or forest on clay and alluvial soils of flood plains and creek lines.	Vulnerable	No
Swainsona murrayana – Slender Darling-pea	Saltbush, black box and grassland communities on level plains. Native grasslands or grassy woodlands that have been intermittently grazed or cultivated.	Vulnerable	Unlikely – Level of disturbance

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Table 2: EPBC Protected Matters Database results – Fauna (5km x 5km)

Species	Preferred Habitat	EPBC Act Status	Likelihood[1]
Birds			
Anthochaera hrygia – Regent Honeyeater	Dry open forest and woodlands on inland slopes and valleys particularly Box Woodlands.	Critically Endangered	No
Hirundapus caudacutus - White-throated Needletail	Feed, drink and rest on the wing in large groups. May rest at night in forested country.	Vulnerable	No
Falco hypoleucos Grey Falcon	Usually restricted to shrubland, grassland and wooded watercourses of arid regions	Vulnerable	No
Rostratula australis - Australian Painted Snipe	Margins of densely vegetated swamps and wetlands	Endangered	No
Calidris ferruginea – Curlew Sandpiper	Occur on intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets and lagoons	Critically Endangered	No
Polytelis swainsonii – Superb Parrot	Mainly inhabits forests and woodlands dominated by eucalypts.	Vulnerable	Unlikely
Grantiella picta – Painted Honeyeater	Inhabits Boree/ Weeping Myall (Acacia pendula), Brigalow and Box-Gum Woodlands	Vulnerable	No
Lathamus discolor – Swift Parrot	Requires flowering eucalypts or abundant lerp infestations.	Critically Endangered	No
Melanodryas cucullata cucullate – South-eastern Hooded Robin	Prefers lightly wooded country, eucalypt woodland, acacia scrub and mallee. Often in or near clearings or open areas. Requires structurally diverse habitats.	Endangered	No
Botaurus poiciloptilus – Australasian Bittern	Found in wetlands with tall, dense vegetation, favors permanent and seasonal freshwater habitats.	Endangered	No
Calyptorhynchus lathami lathami – South-eastern Glossy Black-Cockatoo	Forests, coastal woodlands of sheoak	Vulnerable	No
Neophema chrysostoma – Blue-winged Parrot	Coastal, sub-coastal and inland areas, right through to semi-arid zones. Favour grasslands and grassy woodlands. Can also be seen in modified environments.	Vulnerable	No
Stagonopleura guttata – Diamond Firetail	Grassy eucalypt woodlands, Box-Gum Woodlands and Snow Gum Woodlands. Occurs in open forest, Natural Temperate Grassland and mallee.	Vulnerable	No
Aphelocephala leucopsis – Southern Whiteface	Dry, open forest and woodlands and inland scrubs of mallee, mulga and saltbush.	Vulnerable	No
Climacteris picumnus victoriae – Brown Treecreeper	Inhabits eucalypt woodlands and dry open forest of the inland slopes and plains.	Vulnerable	No
Mammals			
Dasyurus maculatus – Spot-tailed Quoll	Mature wet forest habitat in areas with rainfall 600 mm/year	Endangered	No
Nyctophilus corbeni – Corben's Long-eared Bat	Mallee, bulloke Allocasuarina and box eucalypt dominated communities, but it is distinctly more common in box/ironbark/cypress-pine.	Vulnerable	No
Pteropus poliocephalus – Grey-headed Flying-fox	Requires foraging resources and roosting sites.	Vulnerable	No
Phascolarctos cinereus – Koala	Temperate, sub-tropical and tropical forest, woodland and semi-arid communities dominated by Eucalyptus species	Vulnerable	Unlikely
Chalinolobus dwyeri – Large -eared Pied Bat	Roosts in caves (near their entrances), crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin.	Vulnerable	No

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Species	Preferred Habitat	EPBC Act Status	Likelihood[1]
Pseudomys novaehollandiae – New Holland Mouse	Inhabit open heathlands, woodlands and forests with a heathland understory and vegetated sand dunes.	Vulnerable	No
Petaurus australis australis – Yellow-bellied Glider	Tall, mature Eucalypt forests with high rainfall and nutrient rich soils.	Vulnerable	No
Reptiles			
Aprasia parapulchella – Pink-tailed Worm-lizard	Small rocks (15–60 cm basal area) shallowly embedded in the soil.	Vulnerable	No
Hemiaspis damelii – Grey Snake	Prefers woodlands, on heavier, cracked clay soils, in association with water bodies, small gullies and ditches.	Endangered	No
Delma impar – Striped Legless Lizard	Natural Temperate Grassland, grasslands with a high exotic component and modified grasslands with surface rocks, logs and fallen timber.	Vulnerable	Unlikely – Level of disturbance, lack of habitat
Uvidicolus sphyrurus – Border Thick-tailed Gecko	Steep rocky or scree slopes, especially granite. Favors forest and woodland areas with boulders, rock slabs, fallen timber and deep leaf litter.	Vulnerable	No
Anomalopus mackayi – Five-clawed Worm-skink	Lower slopes of slight rises in grassy White Box woodland, River Red Gum-Coolibah-Bimble Box woodland. May occur in grassland areas and open paddocks with scattered trees.	Vulnerable	Unlikely – Level of disturbance
Migratory Marine Birds			
Apus pacificus – Fork-tailed Swift	Spend most their life airborne. Build their nests on cliffs.	Migratory	No
Migratory Terrestrial Birds			
Hirundapus caudacutus – White-throated Needletail	Feed, drink and rest on the wing in large groups. May rest at night in forested country.	Vulnerable	No
Motacilla flava – Yellow Wagtail	Found in short grass, bare ground, swamp margins, sewage ponds and town lawns.	Migratory	No
Myiagra cyanoleuca – Satin Flycatcher	Tall wet eucalypt forests of SE Australia.	Migratory	No
Rhipidura rufifrons – Rufous Fantail	Rainforest, dense wet forests, swamp woodlands and mangroves, preferring deep shade, and is often seen close to the ground.	Migratory	No
Migratory Wetland Birds			
Gallinago hardwickii – Latham's Snipe	Inhabits freshwater wetlands on or near the coast, generally among dense cover.	Migratory	No
Calidris ferruginea- Curlew Sandpiper	Occupies littoral and estuarine habitats, mainly found in intertidal mudflats of sheltered coasts.	Critically Endangered	No
Calidris acuminata – Sharp-tailed Sandpiper	Prefers the grassy edges of shallow inland freshwater wetlands.	Migratory	No
Calidris melanotos – Pectoral Sandpiper	Coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands.	Migratory	No
Actitis hypoleucos – Common Sandpiper	Found in coastal or inland wetlands, both saline or fresh.	Migratory	No

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Table 3: BioNet Atlas of NSW Wildlife – Fauna (10km x 10km)

Species	Preferred Habitat	BC Act Status	Likelihood[1]
Aves			
Chthonicola sagittate - Speckled warbler	Found in a wide range of Eucalyptus dominated communities that have a grassy understorey, often on rocky ridges or in gullies.	Vulnerable	No
Pomatostomus temporalis temporalis - Grey-crowned Babbler (eastern subspecies)	Open Box-Gum Woodlands on the slopes, and Box-Cypress-pine and open Box Woodlands on alluvial plains.	Vulnerable	Unlikely
Daphoenositta chrysoptera - Varied Sittella	Found in eucalypt woodlands and forests, prefer rough-barked trees like stringybarks and ironbark's or mature trees with hollows or dead branches.	Vulnerable	No
Haliaeetus leucogaser – White-bellied Sea-Eagle	Surface waters along coasts, islands, inlets also along larger inland rivers and lakes.	Vulnerable	No
Hieraaetus morphnoides – Little Eagle	Prefers open eucalypt forest, woodland or open woodland. Requires tall living trees in a remnant patch.	Vulnerable	Unlikely
Falco subniger – Black Falcon	Arid and semi-arid woodland, grassland and shrubland. Prefers eucalypt-dominated watercourses.	Vulnerable	No
Glossopsitta pusilla – Little Lorikeet	Open Eucalyptus woodland and forest. Riparian habitats with high soil fertility.	Vulnerable	No
Neophema pulchella – Turquoise Parrot	Outskirts of eucalypt woodlands adjoining timbered ridges, clearings and farmland creeks.	Vulnerable	Unlikely
Climacteris picumnus victoriae – Brown Treecreeper (eastern subspecies)	Dry open forest and eucalypt woodlands, dominated by stringybarks or rough-barked eucalypts.	Vulnerable	No
Anthochaera phrygia - Regent Honeyeater	Dry open forest and woodlands on inland slopes and valleys particularly Box Woodlands.	Endangered	No
Artamus cyanopterus cyanopterus – Dusky Woodswallow	Predominantly dry, open eucalypt woodlands and forests.	Vulnerable	No
Melanodryas cucullate cucullate – Hooded Robin (south-eastern form)	Prefers lightly wooded country, predominantly eucalypt woodland, mallee and acacia scrub.	Vulnerable	No
Stagonopleura guttata – Diamond Firetail	Grassy eucalypt woodlands, Box-Gum Woodlands and Snow Gum.	Vulnerable	No
Anseranas semipalmata – Magpie Goose	Shallow wetlands, dense rushes or sedges, wet grasslands, and floodplains.	Vulnerable	No
Oxyura australis – Blue-billed Duck	Deep water, large permanent wetlands and swamps. Dense aquatic vegetation.	Vulnerable	No
Rostratula australis – Australian Painted Snipe	Fringes of dams, swamps, nearby marshy areas.	Endangered	No
Mammalia			
Phascolarctos cinereus- Koala	Temperate, sub-tropical and tropical forest, woodland and semi-arid communities dominated by Eucalyptus species	Endangered	Unlikely
Dasyurus maculatus – Spotted-tailed Quoll	Mature wet forest habitat in areas with rainfall 600 mm/year.	Vulnerable	No
Petaurus norfolcensis – Squirrel Glider	Requires an abundance of tree hollows. Mature Box, River Red Gum Forest and Box-Ironbark woodlands.	Vulnerable	No

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Species	Preferred Habitat	BC Act Status	Likelihood[1]
Chalinolobus dwyeri – Large-eared Pied Bat	Roosts in caves (near their entrances), crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin.	Vulnerable	No
Saccolaimus flaviventris – Yellow-bellied Sheathtail-bat	Roosts singly or in groups of up to six in tree hollows and buildings. Utilise mammal burrows in treeless environments.	Vulnerable	Unlikely
Falsistrellus tasmaniensis – Eastern False Pipistrelle	Prefers moist habitats, with trees above 20m tall.	Vulnerable	No
Scoteanax rueppellii – Greater Broad-nosed Bat	Woodlands, moist and dry eucalypt forest and rainforest. Commonly found in tall wet forest, requires tree hollows.	Vulnerable	No
Vespadelus troughtoni – Eastern Cave Bat	Cave roosting species found in dry open forest and woodland, near cliffs or rocky overhangs.	Vulnerable	No
Miniopterus orianae oceanensis – Large Bent-winged Bat	Requires cave as a primary roosting habitat.	Vulnerable	No
Reptilia			
Uvidicolus sphyrurus – Border Thick-tailed Gecko	Steep rocky or scree slopes, especially granite. Favors forest and woodland areas with boulders, rock slabs, fallen timber and deep leaf litter.	Vulnerable	No
Aprasia parapulchella – Pink-tailed Legless Lizard	Small rocks (15–60 cm basal area) shallowly embedded in the soil.	Vulnerable	No

Table 3: BioNet Atlas of NSW Wildlife – Flora (10km x 10km)

Species	Preferred Habitat	BC Act Status	Likelihood[1]
Digitaria porrecta – Finger Panic Grass	Native open forest, woodlands or grasslands.	Endangered	No
Polygala linariifolia – Native Milkwort	Sandy soils in dry eucalypt forest and woodland with a sparse understory.	Endangered	No

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Attachment 2: Terrestrial Habitat (Native Grassland) Assessment Categories

Terrestrial Habitat assessment was undertaken to develop an understanding of the extent and conditions of habitats within the study area. The results of which are to assist in the analysis of the likelihood of occurrence of threatened and migratory species as well as documenting habitat condition. This will include the identification of important habitat features such as movement corridors and important microhabitat features in grassland communities. The habitat assessment enabled fauna habitat condition mapping where the study area was assigned ranking relative to one another (Very High, High, Medium, Low & Very Low) and their approximate extent mapped. The following rankings were assigned relative to each other (not an overall stand-alone general condition) with consideration (but not necessarily all) of the following attributes:

Very High & High Quality Grassland Habitat (None Present)

- Patch size large.
- Habitat is well connected to other areas of habitat.
- Native grass, forb and herb density is high.
- Few invasive weed species present.
- Good quantities of rock and microhabitats present.
- Contains levels of habitat that are likely to support grassland dependent threatened species that are known to, or are likely to occur in the study area.
- Threatened species have been observed or are known to occur there from this survey, previous records, or author's knowledge.

Moderate Quality Grassland Habitat (None present)

- Patch size moderately sized and/or native grass cover is sparse.
- Moderate native grass, forb, and herb density.
- Grass or grass like invasive species present.
- Some rock and other microhabitats present.
- Habitat has some connectivity to surrounding habitat.
- Contains limited areas of habitat that are likely to support grassland dependent threatened species that are known to, or are likely to occur in the study area.

Very Low & Low Quality Grassland Habitat (Photos 1, 2 & 3)

- Patch size small and/or native grass cover is negligible.
- No native grasses, forbs and/or herbs visually present.
- Homogenous landscape with no other microhabitats.
- Site has little to no connectivity to surrounding areas.
- High invasive weed or exotic annual grass load.
- Unlikely to support threatened species on a permanent basis.

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Attachment 3: Photos from the Site Inspection – 11/09/23

Photo 1. Site conditions, cropped paddock, no natives, east orientation. D. Wall 2023

Photo 2: Site conditions, cropped paddock, scattered White Box tree to be retained. East orientation. D. Wall 2023

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Photo 3. Site conditions, southern end of the paddock, east orientation. D. Wall 2023

Photo 4: Three remnant White Box trees within the works area, to be retained. East orientation. D. Wall 2023

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Photo 5: Remnant, native White Box trees bordering the works area, to be avoided, east orientation. D. Wall 2023

Photo 6: Remnant, native White Box trees bordering the works area, to be avoided, west corner of site, west orientation. Photo: D.Wall 2023

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Photo 7: Exotic vegetation on the west boundary, south orientation. Photo: D.Wall 2023

Photo 8: Formed access into the site. Photo: D.Wall, 2023

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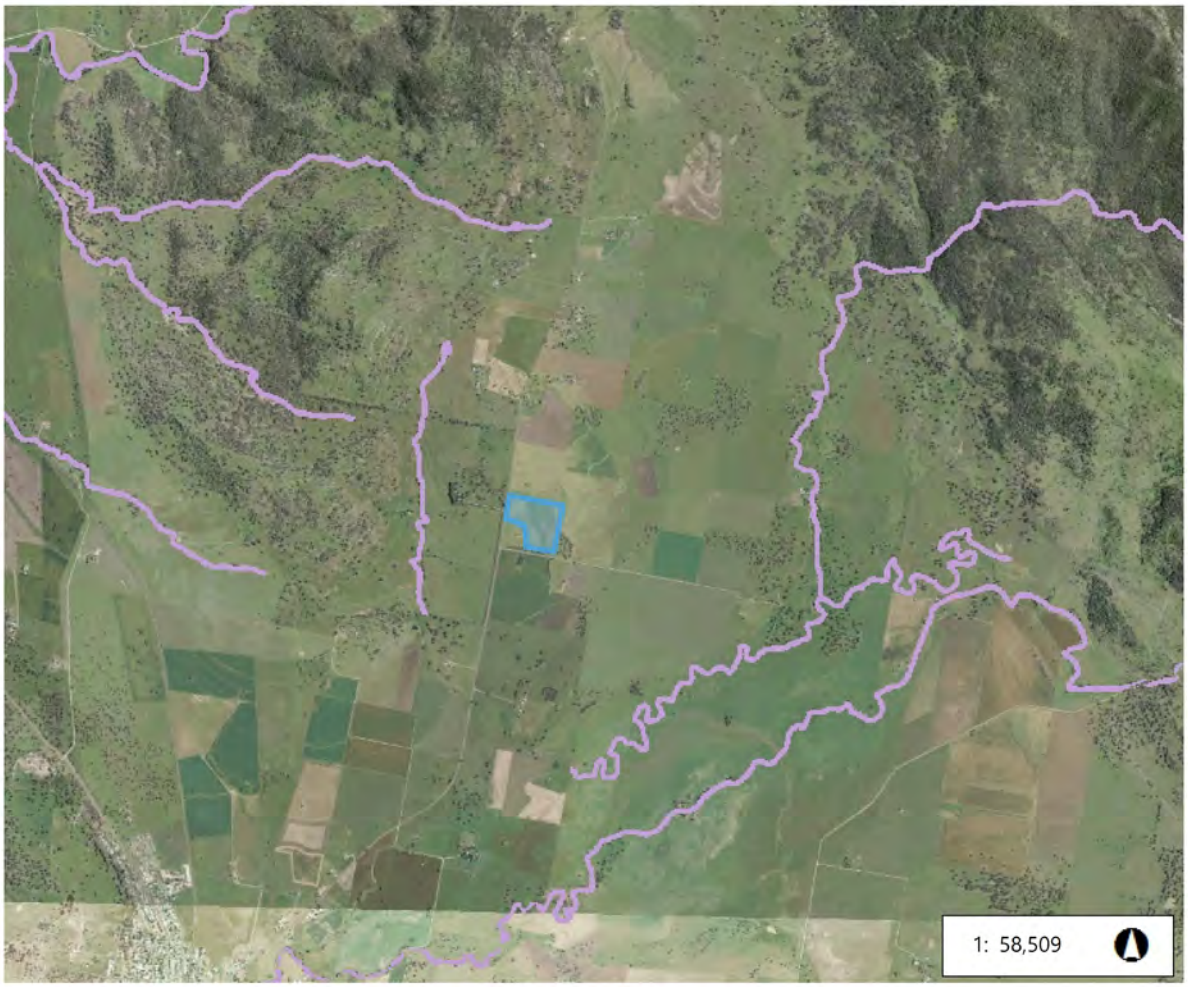
Attachment 4: BOSET Report Results

Biodiversity Values Map



2,972.3 0 1,486.13 2,972.3 Metres

WGS_1984_Web_Mercator_Auxiliary_Sphere

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.

Legend

- Biodiversity Values that have been mapped for more than 90 days
- Biodiversity Values added within last 90 days
- Native Vegetation Area Clearing Estimate (NVACE)
- Development area selected by proponent

03/11/2023 02:47 PM

Imagery © Airbus DS/Spot Image 2016

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The results provided in this tool are generated using the best available mapping and knowledge of species habitat requirements.

This map is valid as at the date the report was generated. Checking the Biodiversity Values Map viewer for mapping updates is recommended.

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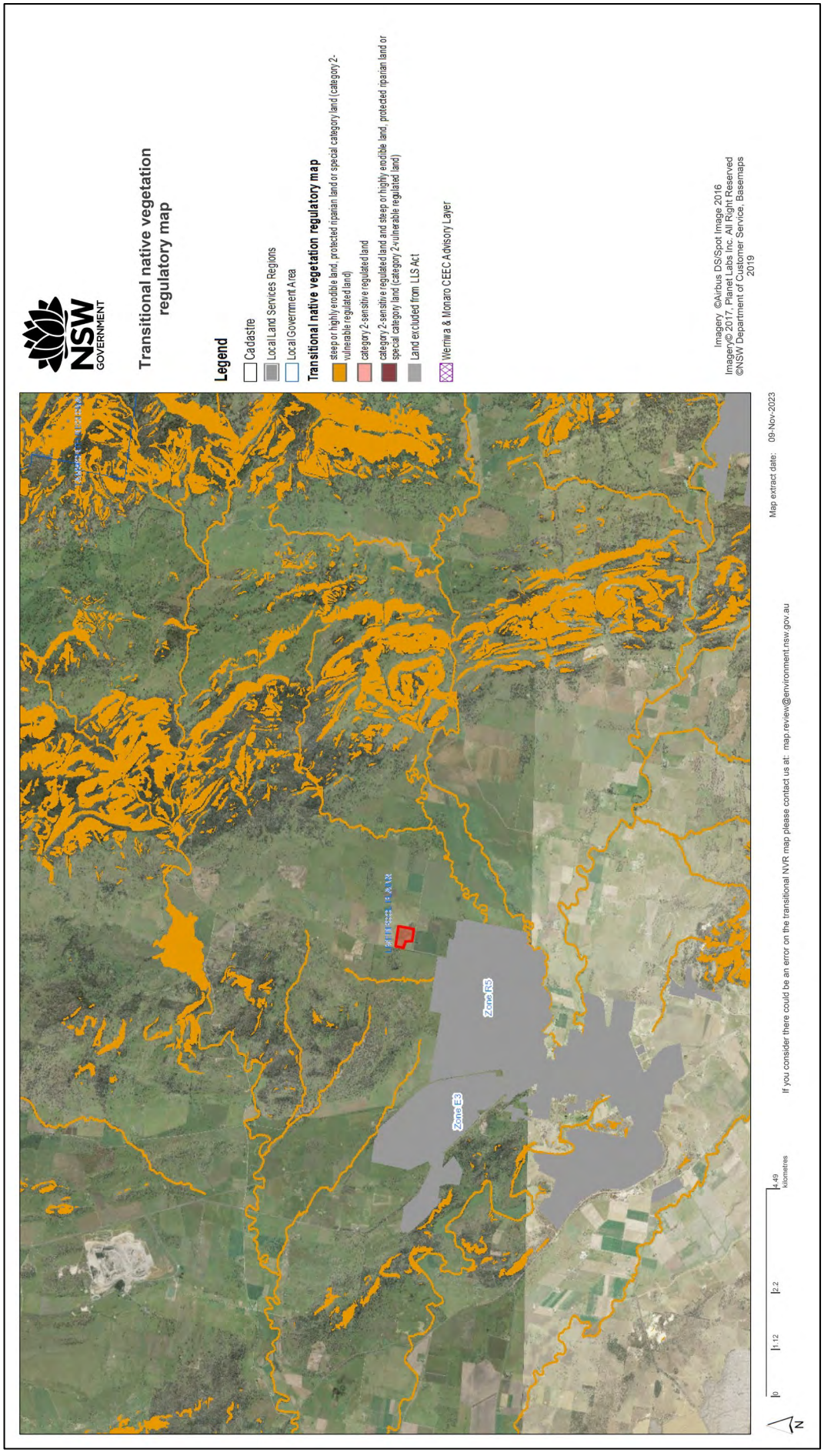
Attachment 5: Transitional Native Vegetation Regulatory Map



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