



Preliminary Site Assessment

Humelink, Bannaby 2580 NSW.

Prepared for Mal Brierly | Multiple Lots and DPs

29 April 2022



ABOUT THIS DOCUMENT

This document has been prepared by Ecologist Finbar Shields and approved for release to client by our Principal Ecologist, Lesley Peden, Accredited Biodiversity Assessor NSW licence BAAS19005.

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Introduction

Ecology Consulting were engaged by Mal and Rebecca Brierly to undertake a Preliminary Site Assessment (PSA) on behalf of several landholders affected by the proposed Transgrid Humelink development (Bannaby 3).

Our understanding of this development is that the original route (Bannaby 1) was found to have high biodiversity constraints as it passes through Tarlo National Park and contains a large extent of heavily forested native vegetation. As such, Transgrid have determined it to be neither time nor cost effective. Transgrid have proposed a new route (Bannaby 3) which passes through private, largely agricultural land, with presumably lower apparent biodiversity values.

The purpose of this report is to provide a brief overview of biodiversity values observed on the five properties, gain an understanding of the extent and condition of native vegetation and threatened species habitat, and guide the next steps in biodiversity assessment.

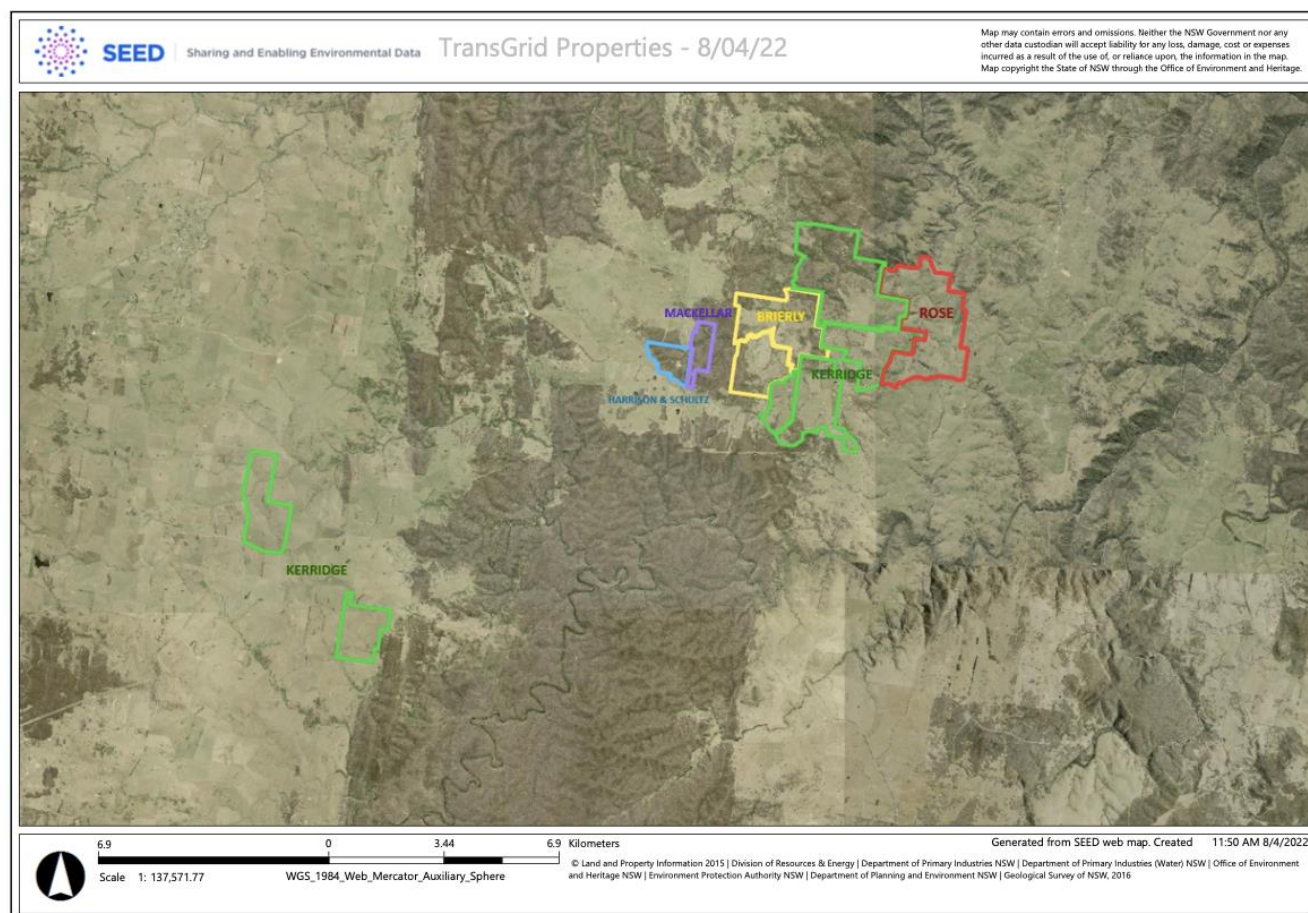
Site location

The site is located in the Southern Tablelands, approximately 20 km east of Taralga, in Bannaby, NSW, See Map 1.

Site details

Site name	- Brierly (North): 189 Adavale Road (Bannaby) & Brierly (South): 1607 Bannaby Road (Bannaby) - Harrison & Schultz: 1329 Bannaby Road (Bannaby) - Mackellar: 1403 Bannaby Road (Bannaby) - Kerridge: 522 Bannaby Road (Primary) and 363 Hanworth Road (Bannaby) (Secondary – Client says this is used) - Rose: 355 (Primary) or 365 (Secondary) Hanworth Road (Bannaby)
Lot/DP	Multiple lots and DPs
GPS co-ordinates	- Brierly: -34.421115, 149.982144 (North) and -34.431336, 149.974863 (South) - Harrison & Schultz: -34.431477, 149.952247 - Mackellar: -34.433389, 149.95641 - Kerridge: -34.438617, 149.989856 (Primary) and -34.435336, 150.006196 (secondary) - Rose: -34.432434, 150.022034 (Primary) and -34.427602, 150.026132 (Secondary)
LGA	Upper Lachlan Shire Council
Zoning	RU2 Rural Landscape

MAP 1: OVERVIEW OF THE STUDY AREA



Land form

Local topography	Undulating rises with low relief (10 - 40 m) and gentle slopes. Permanent erosional stream channel closely to widely spaced. Local elevations between 600 and 800 m.
Geology and soils	A variety of geologies and soils were observed across the study area. Predominantly porphyritic rocks with quartz and feldspar. Yellow and Red Earths and Yellow Podzolic Soils on foot slopes. Acid yellow and red duplex soils on crests and side slopes.

Land use

Land use	Current	Planning	Not Planning
Residence/s—if planned please note stage and whether bushfire report is available	☒	☐	☐
Grazing	☒	☐	☐
Vineyard, orchard or other horticulture	☐	☐	☒
Private woodlot or forestry plantation	☐	☐	☒
Quarry or mine	☐	☐	☒
Crown land that is not a State forest or NPWS reserve	☐	☐	☒

Land use	Current	Planning	Not Planning
Special purpose—school, pony club, golf course, cemetery etc.	☐	☐	☒
Conservation—if yes please provide details of any existing conservation agreement	☐	☐	☒

Desktop research

Research undertaken

Database searches	
Date completed	6/04/2022
NSW Planning Portal Property Report	☒
NSW Biodiversity Values Map (BVM)	☒
Atlas of Living Australia species report, 10 km radius	☒
Commonwealth EPBC protected matters, 10 km radius	☒
Google Earth—Current and historical search	☒
NSW BioNet species & Threatened Ecological Communities report, 10 km radius	☒
NSW BioNet Vegetation Classification Data	☒
SEED (Sharing and Enabling Environmental Data) Portal here datasets.seed.nsw.gov.au	☒
NSW State Vegetation Type Map	☒

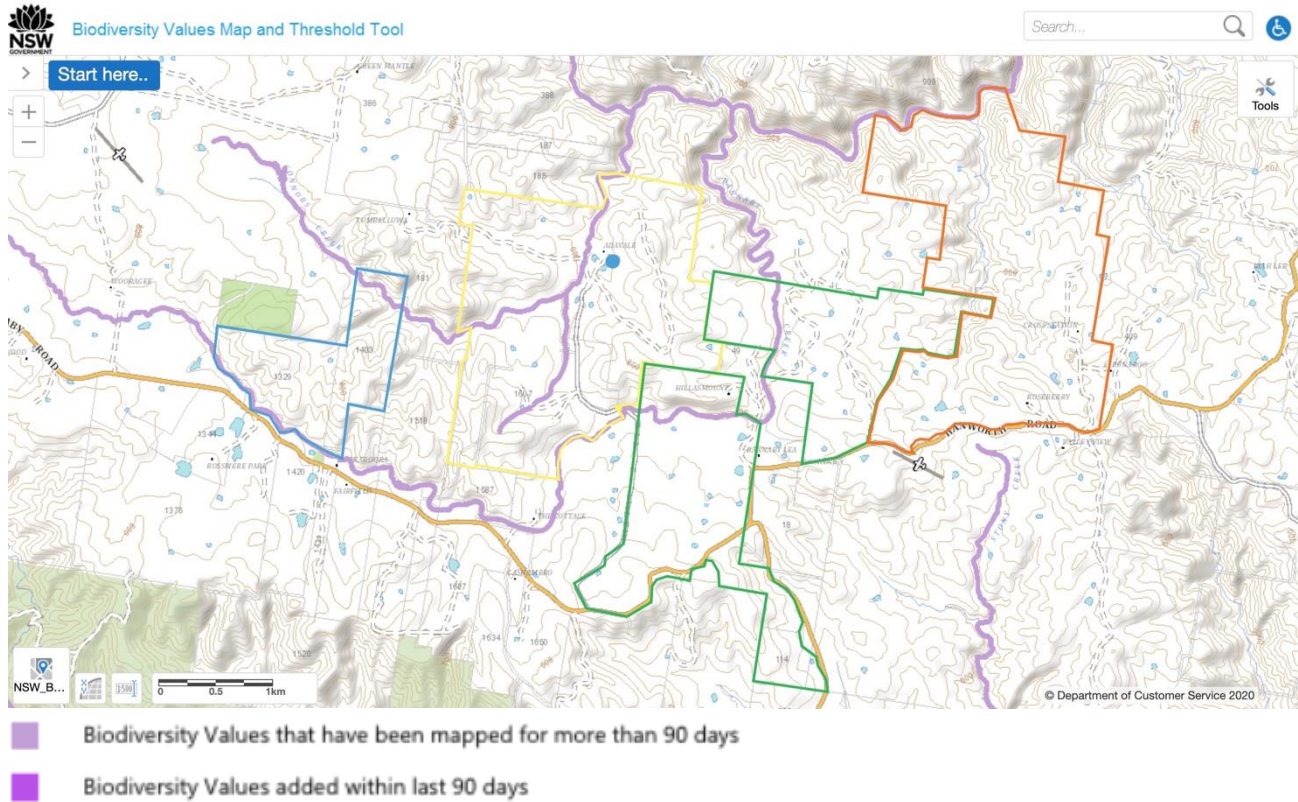
Conservation values of land adjoining site	Yes	No
Nature reserve or national park	☐	☒
Travelling Stock Reserve	☐	☒
Large block of native vegetation under private management	☒	☐
Water resource—creek, river, lake or wetland	☒	☐
Other areas likely to be of high conservation value	☒	☐

Tarlo National Park is located to the south of the study area and Mares Forest National Park to the north. There are also several other nature reserves and national parks 15 km west of the study area, these include: Bangadilly National Park, Kerrawary Nature Reserve and The Wollondilly River Nature Reserve. Within the study area there are several creek lines that have been mapped on the Biodiversity Values Map (BVM), see Map 2: Biodiversity Values Map for further information. These waterways are mapped as being Biodiverse Riparian Land on the BVM mapping layer.

Conservation values on-site	Yes	No
Local terrestrial biodiversity noted on Planning Report / Council LEP	☒	☐
State significant biodiversity/habitat areas noted on NSW Biodiversity Values Map	☒	☐
Other mapping relevant	☐	☒

While not identified on the NSW BVM map, some of the sites e.g., Brierly Western Forest contained significant old growth vegetation in high condition. The condition between sites varied, with some offering minimal native vegetation across much of the site, and others displaying almost complete plant community types in high native condition. Similarly, the distribution of exotic forbs and grass species varied widely across the observed sites. Sites that had been historically grazed were observed to have a greater composition percentage of exotic grasses such as *Phalaris aquatica* and *Sporobolus africanus*, and forbs like *Verbascum* spp., *Solanum* spp. and *Phytolacca* sp.

MAP 2: BIODIVERSITY VALUES MAP



THREATENED ECOLOGICAL COMMUNITIES AND SPECIES

Threatened ecological communities and species known or likely to occur within 10 km.

	Ecological Communities	Flora	Fauna	Migratory
Commonwealth-listed (EPBC)	3	22	27	13
NSW-listed (BioNet, incomplete)	7	14	13	-
Atlas of Living Australia	-	12	14	-

THREATENED ECOLOGICAL COMMUNITIES

TECs known or likely to occur in the local area include:

- White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions (Critically Endangered Ecological Community - NSW and Commonwealth),
- Natural Temperature Grasslands of the South Eastern Highlands (Commonwealth)
- Werriwa Grassy Woodland - Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions and derived grassland (NSW).
- Tableland Basalt Forest in the Sydney Basin and South Eastern Highlands Bioregions (NSW).

THREATENED FLORA SPECIES

Key threatened flora species known or likely to occur in the local area include:

- Buttercup Doubletail (*Diuris aequalis*)
- Black Gum (*Eucalyptus aggregata*)
- Basalt Peppercress (*Lepidium hyssopifolium*)
- Hoary Sunray (*Leucochrysum albicans* subsp. *tricolor*)
- Cotoneaster Pomaderris (*Pomaderris cotoneaster*)
- Kangaloon Sun Orchid (*Thelymitra kangaloonica*)
- Austral Toadflax (*Thesium australe*)

THREATENED FAUNA SPECIES

Key threatened fauna known or likely to occur in the local area include:

- Birds such as: Regent Honeyeater (*Anthochaera phrygia*), Australasian Bittern (*Botaurus poiciloptilus*), Gang-gang Cockatoo (*Callocephalon fimbriatum*), Swift Parrot (*Lathamus discolor*), Eastern Curlew (*Numenius madagascariensis*), Scarlet Robin (*Petroica boodang*) and Australian Painted Snipe (*Rostratula australis*).
- Frogs such as: Booroolong Frog (*Litoria booroolongensis*) and Stuttering Frog (*Mixophyes balbus*)
- Fish (in nearby waterways) such as: Macquarie Perch (*Macquaria australasica*).

- Insects such as: Bathurst Copper Butterfly (*Paralucia spinifera*) and Golden Sun Moth (*Synemon plana*).
- Mammals such as: Spot-tailed Quoll (*Dasyurus maculatus maculatus*), Koala (*Phascolarctos cinereus*), Greater Glider (*Petauroides volans*), Brush-tailed Rock-wallaby (*Petrogale penicillata*) and Large-eared Pied Bat (*Chalinolobus dwyeri*).
- Reptiles such as: Pink-tailed Worm-lizard (*Aprasia parapulchella*) and Striped Legless Lizard (*Delma impar*).

Field inspection

Date completed	11/04/2022
Weather conditions	Sunny with afternoon cloud cover 19°C, with light SSE winds.
Site notes*	A number of sites were observed, and vegetation condition and habitat features recorded across the area. In-order of observation these included: 355 Hanworth Rd (Rose), 189 Adavale Rd (Brierly), Border of Brierly and Kerridge, Brierly Western Forest, and Schultz. For an area map of site inspection locations, see Map 3 – Site Locations.

Flora

Observation	Threatened flora	Weeds
During fieldwork	Not observed at time of survey	- Mullein (<i>Verbascum</i> spp.) - Blackberry (<i>Rubus fruticosus</i> agg.) - Inkweed (<i>Phytolacca octandra</i>) - Serrated Tussock (<i>Nassella trichotoma</i>) - Blackberry Nightshade (<i>Solanum</i> spp.) - Sheep Sorrel (<i>Acetosella vulgaris</i>) - Thistles (<i>Cirsium</i> spp.)
Reported by landholder	NA	NA

THREATENED ECOLOGICAL COMMUNITIES

A preliminary survey of the property identified that Box Gum Woodland and Secondary Derived Grassland (Box Gum Woodland CEEC) is likely to be present across some of the study area.

FLORA SPECIES

[A list of all the species observed on site is provided in List 1.](#)

CANOPY SPECIES

The canopy species varied across the study area, for a complete site profile of each studied site, go to section: [Site Profiles](#).

MID-STORY SPECIES

The mid-story species varied across the study area, for a complete site profile of each studied site, go to section: [Site Profiles](#).

UNDER-STORY SPECIES

The under-story species varied across the study area, for a complete site profile of each studied site, go to section: [Site Profiles](#).

LIST 1: PRELIMINARY FLORA LIST

Growth form	Scientific name	Common name
Tree	<i>Angophora floribunda</i>	Rough-barked Apple
Tree	<i>Eucalyptus amplifolia</i>	Cabbage Gum
Tree	<i>Eucalyptus blakelyi</i>	Blakely's Red Gum
Tree	<i>Eucalyptus bridgesiana</i>	Apple Box
Tree	<i>Eucalyptus elata</i>	River Peppermint
Tree	<i>Eucalyptus macrorhyncha</i>	Red Stringybark
Tree	<i>Eucalyptus melliodora</i>	Yellow Box
Tree	<i>Eucalyptus punctata</i>	Grey Gum
Tree	<i>Eucalyptus radiata</i>	Narrow-leaved Peppermint
Tree	<i>Eucalyptus rubida</i>	Candlebark
Tree	<i>Eucalyptus viminalis</i>	Ribbon Gum
Shrub	<i>Acacia decurrens</i>	Black Wattle
Shrub	<i>Acacia genistifolia</i>	Early Wattle
Shrub	<i>Acacia melanoxylon</i>	Blackwood
Shrub	<i>Brachyloma daphnoides</i>	Daphne Heath
Shrub	<i>Bursaria spinosa</i>	Native Blackthorn
Shrub	<i>Cassinia aculeata</i>	Dolly Bush
Shrub	<i>Cassinia arcuata</i>	Sifton Bush
Shrub	<i>Cassinia longifolia</i>	Shiny Cassinia
Shrub	<i>Gynatrix pulchella</i>	Hempbush
Shrub	<i>Hibbertia obtusifolia</i>	Hoary Guinea Flower
Shrub	<i>Leptospermum</i> sp.	Tea Tree
Shrub	<i>Lissanthe strigosa</i>	Peach Heath
Shrub	<i>Melichrus urceolatus</i>	Urn Heath
Shrub	<i>Monotoca scoparia</i>	Prickly Broom Heath
Shrub	<i>Olearia microphylla</i>	Small Leaved Daisy Bush
Shrub	<i>Phytolacca octandra</i>	Inkweed
Shrub	<i>Solanum cinereum</i>	Narrawa Burr
Shrub	<i>Solanum linearifolium</i>	Mountain Kangaroo Apple
Forb*	<i>Acetosella vulgaris</i>	Sheep Sorrel
Forb	<i>Asperula conferta</i>	Common Woodruff
Forb*	<i>Bidens pilosa</i>	Cobbler's Pegs
Forb	<i>Calotis lappulacea</i>	Yellow Burr-daisy
Forb*	<i>Cirsium vulgare</i>	Spear Thistle
Forb*	<i>Conyza bonariensis</i>	Flaxleaf Fleabane
Forb	<i>Coronidium elatum</i>	Flaxleaf Fleabane
Forb	<i>Craspedia variabilis</i>	Common Billy-buttons
Forb	<i>Daucus glochidiatus</i>	Native Carrot
Forb	<i>Desmodium varians</i>	Slender Tick-trefoil

Growth form	Scientific name	Common name
Forb	<i>Dichondra repens</i>	Kidney Weed
Forb	<i>Epilobium billardierianum</i>	Willow Herb
Forb	<i>Erodium crinitum</i>	Blue Crowfoot
Forb	<i>Euchiton sphaericus</i>	Star Cudweed
Forb	<i>Geranium solanderi</i>	Native Geranium
Forb	<i>Glycine clandestina</i>	Twining glycine
Forb	<i>Gonocarpus tetragynus</i>	Poverty Raspwort
Forb	<i>Goodenia hederacea</i>	Ivy Goodenia
Forb	<i>Hardenbergia violacea</i>	False Sarsaparilla
Forb	<i>Hovea heterophylla</i>	Creeping Hovea
Forb	<i>Hypericum gramineum</i>	Small St John's Wort
Forb*	<i>Hypochaeris radicata</i>	Catsear
Forb	<i>Microtis unifolia</i>	Common Onion Orchid
Forb	<i>Oxalis perennans</i>	Wood Sorrel
Forb*	<i>Plantago lanceolata</i>	Lamb's Tongues
Forb	<i>Pomax umbellata</i>	Pomax
Forb	<i>Pseudognaphalium luteoalbum</i>	Jersey Cudweed
Forb	<i>Rumex brownii</i>	Swamp Dock
Forb	<i>Scleranthus biflorus</i>	Two-flowered Knawel
Forb	<i>Sherardia arvensis</i>	Field Madder
Forb*	<i>Solanum nigrum</i>	Black-berry Nightshade
Forb	<i>Stypandra glauca</i>	Nodding Blue Lily
Forb*	<i>Tolpis barbata</i>	Yellow Hawkweed
Forb	<i>Velleia paradoxa</i>	Spurred Velleia
Forb	<i>Veronica gracilis</i>	Slender Speedwell
Forb	<i>Vittadinia cuneata</i>	A Fuzzweed
Forb	<i>Vittadinia gracilis</i>	Woolly New Holland Daisy
Forb	<i>Vittadinia muelleri</i>	A Fuzzweed
Forb	<i>Wahlenbergia gracilentia</i>	Annual Bluebell
Grass & Grasslike	<i>Austrostipa bigeniculata</i>	Yanganbil
Grass & Grasslike	<i>Austrostipa scabra</i>	Speargrass
Grass & Grasslike	<i>Bothriochloa macra</i>	Red Grass
Grass & Grasslike*	<i>Bromus catharticus</i>	Prairie Grass
Grass & Grasslike	<i>Carex inversa</i>	Knob Sedge
Grass & Grasslike	<i>Chloris truncata</i>	Windmill Grass
Grass & Grasslike	<i>Anthoscacne scaber</i>	Common Wheatgrass
Grass & Grasslike	<i>Hemarthria uncinata</i>	Matgrass
Grass & Grasslike	<i>Lepidium sp.</i>	Peppercress
Grass & Grasslike	<i>Microlaena stipoides</i>	Weeping Grass
Grass & Grasslike	<i>Nassella trichotoma</i>	Serrated Tussock
Grass & Grasslike	<i>Panicum effusum</i>	Hairy Panic
Grass & Grasslike*	<i>Paspalum dilatatum</i>	Paspalum
Grass & Grasslike*	<i>Phalaris aquatica</i>	Phalaris
Grass & Grasslike	<i>Poa labillardierei</i> var. <i>labillardierei</i>	Tussock
Grass & Grasslike	<i>Poa sieberiana</i>	Snowgrass

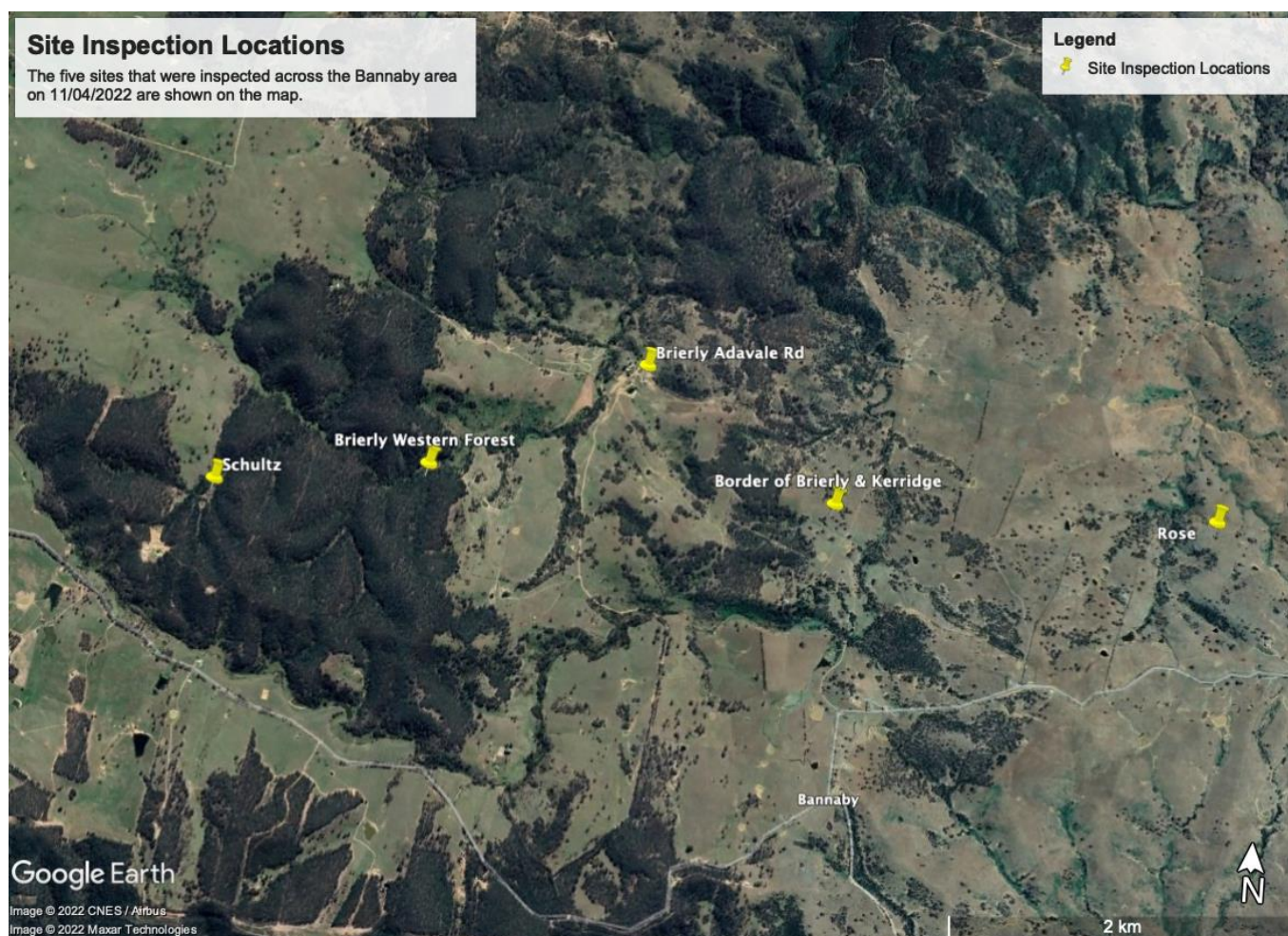
Growth form	Scientific name	Common name
Grass & Grasslike	<i>Poa sieberiana</i> var. <i>cyanophylla</i>	Snowgrass
Grass & Grasslike	<i>Rytidosperma</i> spp.	Wallaby Grass
Grass & Grasslike*	<i>Sporobolus africanus</i>	Parramatta Grass
Grass & Grasslike	<i>Sporobolus creber</i>	Slender Rat's Tail Grass
Grass & Grasslike	<i>Themeda triandra</i>	Kangaroo Grass
Fern	<i>Cheilanthes distans</i>	Bristly Cloak Fern
Fern	<i>Cheilanthes sieberi</i>	Rock Fern
Fern	<i>Pteridium esculentum</i>	Bracken
Other*	<i>Rubus fruticosus</i> agg.	Blackberry complex

* = denotes an exotic species.

Site Profiles

The following section presents a site overview of each of the five properties inspected during this biodiversity assessment. May 3 below shows the location of each site within the broader study area.

Map 3: Inspection Areas



Site overview	Rose – 355 Hanworth Rd, Bannaby
Landholding type	Private residential
GPS	-34.42722°, 150.0186°
Site access	355 and 365 Hanworth road
Date surveyed	11/04/2022
Surveyed by	Lesley Peden (Senior Ecologist) and Finbar Shields (Ecologist)
Site overview	The site has been heavily cleared of trees through its historic management. There are, however, a variety of mature Eucalyptus species remaining in the landscape, which occur as paddock trees and small pockets of open grassy woodland. A substantial amount of natural regeneration is occurring in some areas. These mature trees are a mix of Yellow-Box and Blakey's Red Gum, which are components of the threatened Box Gum Woodland CEEC. A mixture of exotic pasture grass species and native grasses and a moderate variety of native forbs/herbaceous species were observed across the site.
Biodiversity observed	The following assessment focuses on the species observed in and around the above site. It may not include all the species present on the site, in part due to the timing and nature of field work. Bold text indicates an entity is listed as threatened under NSW or Commonwealth law.
- TECs and other plant communities	The dominant plant species observed on site are consistent with it containing the following plant community type/s: • PCT 3376 - Southern Tablelands Grassy Box Woodland – Grassy Woodland – Southern Tablelands Grassy Woodlands On this property the community occurs as both a woodland and in derived grassland condition.
- canopy species	Upper Canopy - Key species included: • Blakey's Red Gum (<i>Eucalyptus blakelyi</i>) • Yellow-Box (<i>Eucalyptus melliodora</i>)
- mid-storey species	Largely removed mid-story - Key species included: • Dolly Bush (<i>Cassinia longifolia</i>) • Silver Wattle (<i>Acacia dealbata</i>)
- understorey species	High diversity of native grasses and forbs in the ground layer. Key species included: • Red Grass (<i>Bothriochloa macra</i>) • Common Wheat Grass (<i>Anthosacne scaber</i>) • Native Geranium (<i>Geranium solanderi</i>) • Weeping Grass (<i>Microlaena stipoides</i>) • Hairy Panic (<i>Panicum effusum</i>) • Blue Crowfoot (<i>Erodium crinitum</i>) • Kidney Weed (<i>Dichondra repens</i>) • Slender Tick-trefoil (<i>Desmodium varians</i>) • Twining Glycine (<i>Glycine clandestina</i>) (For a complete list of species found across the study area, please refer to List 1: Preliminary Flora List)
- fauna	Signs of Eastern Grey Kangaroo, Wombat. Target survey was not the focus of this assessment
Other	N/A

Site overview	Brierly Forest –189 Adavale Road, Bannaby This property contains a variety of ecosystems and vegetation communities which are covered in the following sections. This section covers the Dry Sclerophyll Forest plant community.
Landholding type	Private residential
GPS	-34.421115°, 149.982144°
Site access	189 Adavale Road
Date surveyed	11/04/2022
Surveyed by	Lesley Peden (Senior Ecologist) and Finbar Shields (Ecologist)
Site overview	The site is in high native condition, with a strong native representation across all vegetation strata (upper, mid, and low). The dominant tree species include White Stringy Bark (<i>Eucalyptus globoidea</i>) and Red Stringy Bark (<i>Eucalyptus macrorhyncha</i>), these species are also further regenerating throughout the cleared neighbouring areas. Some minor exotic pasture grass species and exotic forbs were observed on site however, these are not invasive or of threat to the native vegetation present.
Biodiversity observed	The following assessment focuses on the species observed in and around the above site. It may not include all the species present on the site, in part due to the timing and nature of field work. Bold text indicates an entity is listed as threatened under NSW or Commonwealth law.
- TECs and other plant communities	The dominant plant species observed on site are consistent with it containing the following plant community type/s: • <i>PCT: 3650 Goulburn – Lithgow Ranges Silvertop Ash Forest – Dry Sclerophyll Forests (shrubby sub-formation) – South East Dry Sclerophyll Forests</i>
- canopy species	Upper Canopy - Key species included: • White Stringy Bark (<i>Eucalyptus globoidea</i>) • Red Stringy Bark (<i>Eucalyptus macrorhyncha</i>)
- mid-storey species	Intact Mid-story - Key species included: • Dolly Bush (<i>Cassinia longifolia</i>) • Silver Wattle (<i>Acacia dealbata</i>) • Sifton Bush (<i>Cassinia arcuata</i>) • Daphne Heath (<i>Brachyloma daphnoides</i>) • Guinea Flower (<i>Hibbertia obtusifolia</i>) • Small-leaved Daisy Bush (<i>Olearia microphylla</i>)
- understorey species	High diversity of native grasses and forbs in the ground layer. Key species included: • Native Geranium (<i>Geranium solanderi</i>) • Weeping Grass (<i>Microlaena stipoides</i>) • Hairy Panic (<i>Panicum effusum</i>) • Blue Bell (<i>Wahlenbergia gracilis</i>)

	• Bracken (<i>Pteridium esculentum</i>) • Small St John's Wort (<i>Hypericum gramineum</i>) • Twining Glycine (<i>Glycine clandestina</i>) • Common Wheat Grass (<i>Anthosacne scabra</i>) (For a complete list of species found across the study area, please refer to List 1: Preliminary Flora List)
- fauna	Signs of Eastern Grey Kangaroo, Wombat. Target survey was not the focus of this assessment.
Other	N/A

Site overview	Border of Brierly and Keith Kerridge
Landholding type	Private residential
GPS	34.42638889°, 149.99444444°
Site access	Access via 363 Hanworth Road, then north via a private driveway/road.
Date surveyed	11/04/2022
Surveyed by	Lesley Peden (Senior Ecologist) and Finbar Shields (Ecologist)
Site overview	The site starts on the border of Brierly and Kerridge properties within high quality woodland consistent with PCT 3227. The dominant over-story species present include Cabbage Gum (<i>Eucalyptus amplifolia</i>), Grey Gum (<i>Eucalyptus punctata</i>) and Narrow-leaved Peppermint (<i>Eucalyptus radiata</i>). A diverse mid-story assemblage was observed, with dominant species consisting of Wattles (<i>Acacia</i> spp.), Dolly Bush (<i>Cassinia</i> spp.) and Kangaroo Apple (<i>Solanum</i> spp.). While many native grasses and forbs occur in this area, there is a moderate presence of Inkweed (<i>Phytolacca octandra</i>) at the border of the two properties. At this point the vegetation transitions from the sheltered and heavily vegetated PCT 3227 into open paddocks on Kerridge land with a shift in dominant over-story species. Within this area of the site the presence of Yellow Box (<i>Eucalyptus melliodora</i>), Candlebark (<i>Eucalyptus rubida</i>) and Cabbage Gum (<i>Eucalyptus amplifolia</i>) is consistent with PCT 3376. This area has experienced a history of grazing and agriculture and the understory contains mostly exotic pasture grasses and exotic forbs. The mid-story has been mostly removed, and large infestations of Blackberry (<i>Rubus</i> sp.) and Nightshade (<i>Solanum</i> spp.) occur.
Biodiversity observed	The following assessment focuses on the species observed in and around the above site. It may not include all the species present on the site, in part due to the timing and nature of field work. Bold text indicates an entity is listed as threatened under NSW or Commonwealth law.
- TECs and other plant communities	The dominant plant species observed on site are consistent with it containing the following plant community type/s: • <i>PCT 3227 - Western Blue Mountains Sheltered Shale Forest – Wet Sclerophyll Forests – Southern Escarpment Wet Sclerophyll Forest</i> • <i>PCT 3376 - Southern Tableland Grassy Box Woodland – Grassy Woodlands - Southern Tableland Grassy Woodlands</i>
- canopy species	Upper Canopy - Key species included: • Cabbage Gum (<i>Eucalyptus amplifolia</i>) • Narrow-leaved Peppermint (<i>Eucalyptus radiata</i>) • Grey Gum (<i>Eucalyptus punctata</i>) • Yellow Box (<i>Eucalyptus melliodora</i>) • Candlebark (<i>Eucalyptus rubida</i>)

- mid-storey species	Largely removed mid-story - Key species included: • Dolly Bush (<i>Cassinia longifolia</i>) • Nodding Blue Lily (<i>Stypandra glauca</i>) • Wattles (<i>Acacia</i> spp.)
- understorey species	High diversity of native grasses and forbs in the ground layer. Key species included: • Native Geranium (<i>Geranium solanderi</i>) • Weeping Grass (<i>Microlaena stipoides</i>) • Hairy Panic (<i>Panicum effusum</i>) • Wallaby Grass (<i>Rytidosperma</i> sp.) • Nightshade (<i>Solanum</i> spp.) • Inkweed (<i>Phytolacca octandra</i>) • Pomax (<i>Pomax umbellata</i>) (For a complete list of species found across the study area, please refer to List 1: Preliminary Flora List)
- fauna	Signs of Eastern Grey, wombat, stock. Targeted survey was not the focus of this assessment
Other	N/A

Site overview	Brierly Western Forest
Landholding type	Private residential
GPS	34.42694444°, 149.96888889°
Site access	Access via private land from Adavale Road.
Date surveyed	11/04/2022
Surveyed by	Lesley Peden (Senior Ecologist) and Finbar Shields (Ecologist)
Site overview	The site is in a very high native condition with only minor presence of exotic species such as Inkweed (<i>Phytolacca octandra</i>). Structurally intact, this forested area has all stratum represented, including a diverse canopy, to shrubby midstory and dense ground layer. PCT 3481 is the best fit for this site based on the composition of over-story species. This is an unusual PCT for the area, with the site's position in the landscape (protected moist gully) creating a micro-climate for the observed vegetation. The over-story was primarily comprised of Grey Gum (<i>Eucalyptus punctata</i>) and Rough-Barked Apple (<i>Angophora floribunda</i>) in the lower areas, and Blakely's Red Gum (<i>Eucalyptus blakelyi</i>) and Candlebark (<i>Eucalyptus rubida</i>) observed further up the hill. A high diversity of native grasses and forbs were present in the in the ground layer, as well as a diverse mid-story of primarily wattles (<i>Acacia</i> spp.).
Biodiversity observed	The following assessment focuses on the species observed in and around the above site. It may not include all the species present on the site, in part due to the timing and nature of field work. Bold text indicates an entity is listed as threatened under NSW or Commonwealth law.
- TECs and other plant communities	The dominant plant species observed on site are consistent with it containing the following plant community type/s: • <i>PCT 3481 – Burragorang Gorges Felsic Stringybark Forest – Dry Sclerophyll Forests (shrub/grass sub-formation) – Central Gorge Dry Sclerophyll Forests</i>
- canopy species	Upper Canopy - Key species included: • Candlebark (<i>Eucalyptus rubida</i>)

	• Blakely's Red Gum (<i>Eucalyptus blakelyi</i>) • Rough-Barked Apple (<i>Angophora floribunda</i>) • Grey Gum (<i>Eucalyptus punctata</i>)
- mid-storey species	Largely removed mid-story - Key species included: • Dolly Bush (<i>Cassinia aculeata</i>) • Nodding Blue Lily (<i>Stypandra glauca</i>) • Silver Wattle (<i>Acacia dealbata</i>) • Broad-leaved Wattle (<i>Acacia falciformis</i>) • Austral Indigo (<i>Indigofera australis</i>) • Kangaroo Apple (<i>Solanum</i> spp.)
- understorey species	High diversity of native grasses and forbs in the ground layer. Key species included: • Native Geranium (<i>Geranium solanderi</i>) • Weeping Grass (<i>Microlaena stipoides</i>) • Wallaby Grass (<i>Rytidosperma</i> sp.) • Nightshade (<i>Solanum</i> spp.) • Inkweed (<i>Phytolacca octandra</i>) • Pomax (<i>Pomax umbellata</i>) • Kidney Weed (<i>Dichondra repens</i>) • Button Everlasting (<i>Coronidium scorpiodes</i>) • Common Raspwort (<i>Gonocarpus tetragynus</i>) • Stinking Pennywort (<i>Hydrocotyle laxiflora</i>) • Bracken (<i>Pteridium esculentum</i>) (For a complete list of species found across the study area, please refer to List 1: Preliminary Flora List)
- fauna	Wallabies, Eastern Grey Kangaroo, Wombat. Note that targeted fauna survey was not the focus of this assessment
Other	N/A

Site overview	Schultz - 1329 Bannaby Road
Landholding type	Private residential
GPS	-34.428443, 149.955689
Site access	Access via 1329 Bannaby Road, crossing Bannaby Creek to access the lot.
Date surveyed	11/04/2022
Surveyed by	Lesley Peden (Senior Ecologist) and Finbar Shields (Ecologist)
Site overview	This site was in very high native condition and vegetation consistent with PCT 3735. A diverse assemblage of over-story canopy species was present, primarily Red Stringybark (<i>Eucalyptus macrorhyncha</i>) and Grey Box (<i>Eucalyptus punctata</i>). The dry sclerophyll forest was also observed to have a high diversity of native grasses and forbs in the ground layer. A sparse to moderate mid-story was present at the site with the dominant species being Wattles (<i>Acacia</i> spp.) and Dolly bush (<i>Cassinia</i> spp.). It is important to note that this was the last site sampled for the day and the light was very limited, impacting on our ability to observe the system more thoroughly.

Biodiversity observed	The following assessment focuses on the species observed in and around the above site. It may not include all the species present on the site, in part due to the timing and nature of field work. Bold text indicates an entity is listed as threatened under NSW or Commonwealth law.
- TECs and other plant communities	The dominant plant species observed on site are consistent with it containing the following plant community type/s: • <i>PCT 3735 – Central Tableland Peppermint Shrub-Grass Forest – Dry Sclerophyll Forest (shrubby sub-formation) – Southern Tableland Dry Sclerophyll Forests.</i>
- canopy species	Upper Canopy - Key species included: • Candlebark (<i>Eucalyptus rubida</i>) • Grey Gum (<i>Eucalyptus punctata</i>) • Red Stringybark (<i>Eucalyptus macrorhyncha</i>) • Brittle Gum (<i>Eucalyptus mannifera</i>)
- mid-storey species	Largely removed mid-story - Key species included: • Dolly Bush (<i>Cassinia</i> spp.) • Silver Wattle (<i>Acacia dealbata</i>) • Black Wattle (<i>Acacia mearnsii</i>) • Kangaroo Apple (<i>Solanum</i> spp.) • Guinea Flower (<i>Hibbertia obtusifolia</i>)
- understorey species	High diversity of native grasses and forbs in the ground layer. Key species included: • Weeping Grass (<i>Microlaena stipoides</i>) • Wallaby Grass (<i>Rytidosperma</i> sp.) • Pomax (<i>Pomax umbellata</i>) • Kidney Weed (<i>Dichondra repens</i>) • Common Raspwort (<i>Gonocarpus tetragynus</i>) • Stinking Pennywort (<i>Hydrocotyle laxiflora</i>) • Spurred Velleia (<i>Velleia paradoxa</i>) • Ivy Goodenia (<i>Goodenia hederacea</i>) (For a complete list of species found across the study area, please refer to List 1: Preliminary Flora List)
- fauna	Targeted fauna survey was not the focus of this assessment
Other	N/A

Fauna

Note: This preliminary assessment recorded only incidental observations of Fauna presence.

Observation	Native fauna	Pests
During fieldwork	- Magpies (<i>Gymnorhina tibicen</i>) - Magpie lark (<i>Grallina cyanoleuca</i>) - Brown Snake (<i>Pseudonaja textilis</i>) - Eastern Rosella (<i>Platycercus eximius</i>) - Crimson Rosella (<i>Platycercus elegans</i>) - Wattle Bird (<i>Anthochaera carunculata</i>) - Wombat (<i>Vombatus ursinus</i>) - Eastern Grey Kangaroo (<i>Macropus giganteus</i>) - Echidna (<i>Tachyglossus aculeatus</i>) - Kookaburra (<i>Dacelo novaeguineae</i>)	- Pigs (diggings) - Rabbits (Scat) - Deer (Rubbings) - Hares - Foxes (scat)
Reported by landholder	-	-

Habitat

Potential habitat for threatened flora and fauna	
Approximate area of properties covered by native vegetation (ha or %) across the broader area	45 - 98%
Approximate area of conservation work (ha or %)	-
Valuable habitat types observed or known on site:	-
old growth native woodland with large hollow-bearing trees	☒
she-oak (<i>Casuarina</i> or <i>Allocasuarina</i>) woodland	☐
other native woodland	☒
native pasture or grassland with >50% native groundcover	☒
rocky outcrops	☒
a farm dam, creek, river or other wetland	☒
koala habitat trees <i>Note: if the site falls within a region subject to the Koala Habitat and the area to be cleared is >1 ha, SEPP 44 may apply.</i>	☒

Potential habitat for threatened flora and fauna	
habitat that is likely to be suitable for/attractive to other threatened species <i>Consider other mammals, birds, reptiles, and flora—e.g., orchids</i>	☒

Management issues and intentions

Other issues observed / raised by landholder	
Approximate area of planned conservation work (ha or %)	
Management issues:	
soil issues including salinity and/or erosion	☐
surface water quality issues (e.g., dams or creeks with cloudy water or algal blooms)	☐
Pest animal and exotic weed control	☒
tree dieback	☐
bushfire risk management	☐
future ownership (transfer/sale) of property	☐
Voluntary conservation agreements/ projects (grants/incentives)	☒
Promoting natural regeneration	☒
Other	☐

Conservation

The landholders deeply value the native biodiversity present within their own respective blocks and wish to protect and enhance their land for conservation and also achieve a balance with productive farming.

While not the focus of the current assessment, the landholders may be interested in participation in a variety of conservation initiatives.

Planning information

Summary of legislated provisions

Humelink is part of the NSW section of Transgrid's Project EnergyConnect (PEC). The NSW Government declared this project as Critical State Significant Infrastructure (CSSI) in August 2019.

"Critical State significant infrastructure (CSSI) projects are high priority infrastructure projects that are essential to the State for economic, social or environmental reasons. The CSSI process involves a declaration by the Minister for Planning that a State significant infrastructure project is critical (NSW Gov't 2015) "

The assessment pathway for CSSI projects requires the Secretary of the Department of Planning and Environment to issue environmental assessment requirements (SEARs).

Preparation of the SEARs involves consultation between the Secretary and relevant government agencies. The Minister may deem Community consultation is also necessary during preparation of the SEARs. The consultation process has strict guidelines, and all stakeholders (including affected landholders) must be consulted as part of the project rollout. The Proponent must document this consultation and demonstrate how the project has responded to any inputs received and outline procedures for complaints handling and resolution.

There may be more than one SEARs required, from general standard to project specific, and the Proponent must address all that are issued for a project in the project's environmental impact statement (EIS). The EIS must be prepared in accordance with Schedule 2 of the EP&A Regulation.

Environmental assessment for CSSI projects aims to focus the EIS on issues that cause the greatest impact and affect the most sensitive parts of the environment. The EIS must be transparent, balanced, well focussed, and legal.

Under the NSW Biodiversity Offsets Policy for Major Projects, a proponent must apply the Framework for Biodiversity Assessment (FBA) to assess impacts on biodiversity. This will involve preparation of a Biodiversity Assessment Report (BAR) which describes the biodiversity values present on the development site and identifies any impacts of the Major Project on these values. The Biodiversity Offset Strategy (BOS) outlines how the proponent intends to offset impacts of the Major Project. These reports form part of the EIS.

For consideration under Commonwealth legislation, the proponent is responsible in determining whether the project needs to be referred to the Commonwealth Department of the Environment for an approval under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). Consideration must be made for any Protected Matters (i.e., Threatened entities listed under Commonwealth legislation) that may be impacted by the development, and identify and assess any that are likely to be significantly impacted. Then the proponent must demonstrate how significant impacts to Protected Matters will be avoided, mitigated and, if necessary, offset.

The project design must demonstrate how impacts on terrestrial and aquatic biodiversity will be avoided and/or minimised. In the event that impacts to biodiversity cannot be avoided during project construction and operation, offsets and/or supplementary measures, must be secured.

It is important to note that as part of the EIS, the proponent must undertake the following:

- analysis of any feasible alternatives to the project,

- description of feasible options (different routes) within the project,
- a description of why the preferred alternative was selected.

Summary of Biodiversity Values

A preliminary assessment of the five properties within the study area has identified that a number of biodiversity values are present that merit further investigation to determine their value.

Although nestled within an agricultural landscape, with associated land modifications, Bannaby retains a high proportion of intact native vegetation. Remnant woodlands and forests are abundant, and the area fulfills an important function in landscape connectivity between Wollondilly River and Mares Forest Guula Ngurra, Bangadilly, Blue Mountains and Tarlo National Park.

Targeted survey for threatened flora and fauna with a likelihood of occurrence was not undertaken during this preliminary assessment. However, the condition of native ecosystems and availability of abundant habitat for a range of species, suggests a high likelihood of presence of threatened species known to occur in the locality.

Box Gum Woodland and Secondary Derived Grassland (CEEC) was identified across the study area. At the Kerridge property it was found to meet the NSW definition due to the modified condition of the understorey. However, at the Rose property, assessment of the ground layer around scattered paddock trees identified that a large extent of that property also meets the Commonwealth definition of Box Gum Woodland, in some places occurring in its Secondary Derived Grassland form.

The Brierly property contains highly diverse old growth forest across much of its extent. Even where canopy trees are cleared, the understorey is rich in native grass and forb species. Several areas are particularly diverse and contain tree and shrub assemblages unusual in the region.

Conclusion and recommendations

It is our understanding that the proponent has consulted with the community and in particular, affected landholders. We have also been advised that consultants engaged by the proponent have undertaken flora and fauna assessments on the proposed Bannaby 3 route. It is assumed that surveys were undertaken in accordance with Commonwealth and NSW legislation.

What is unclear, is whether assessments were undertaken on the original proposed route (Bannaby 1). And if so, whether it is possible to view a description of why the preferred alternative was selected. Presumably the alternative route proposed (Bannaby 3) is in response to prohibitive biodiversity constraints of the original route. If this is the case, then it would be beneficial for affected landholders to see the data comparison between data and credits calculated for Route 1 and Route 3.

To fully quantify the biodiversity values of the study area, it is recommended that an independent, formal assessment be undertaken under the Biodiversity Assessment Method (BAM), and Biodiversity Offset Scheme credits calculated. This would be useful in verifying the accuracy of other studies and in comparing biodiversity values between the original Bannaby 1 route and the proposed alternative Bannaby 3.

It is unknown whether the agricultural history of the study area may have drawn a conclusion that biodiversity values may not be as high. Box Gum Woodland and Secondary Derived Grassland is however, deceptively highly represented in the study area. In terms of biodiversity credits, they may well be of higher value than non-threatened ecosystems in the Bannaby 1 alignment. Without knowing the decision

behind changing the proposed alignment, and data to formally compare the two routes, it is not possible to speculate and offer alternative solutions.

Alternatives to the current proposal

In the event that Transgrid were to reconsider use of the Bannaby 3 route and return to the original alignment (Bannaby 1), an alternative might be for landholders to negotiate with Transgrid that Biodiversity Credits offset requirements could potentially be offset on private land within the proposed Bannaby 3 route.

For example, if landholders within the study area prefer to set aside a portion of their land as a Biodiversity Stewardship Site (as an offset for impacts of this development to biodiversity values in Bannaby 1 route); instead of providing their land for power lines, they would essentially be creating an in-perpetuity conservation zone which would be managed to improve its biodiversity values.