



Threatened and significant flora of roadsides in the Windellama district

Location and conservation significance of roadside sites
with few-seeded bossiaea, Michelago parrot-pea,
matted bush-pea and Wolgan snow gum



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Cover: few-seeded bossiaea (*Bossiaea oligosperma*) **Photo:** John Briggs/OEH.

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1. Introduction

1.1 Background

The Windellama area in the NSW Southern Tablelands has one of the highest densities of threatened flora in the State. The following four threatened (OEH 2017a) or rare plant species are broadly distributed on roadsides and private property:

- few-seeded Bossiaea (*Bossiaea oligosperma*), vulnerable under the *NSW Threatened Species Conservation Act 1995* (TSC Act) and Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)
- Michelago parrot-pea (*Dillwynia glaucula*), Endangered (TSC Act)
- matted bush-pea (*Pultenaea pedunculata*), Endangered (TSC Act)
- Wolgan snow gum (*Eucalyptus gregsoniana*), Rare or Threatened Australian Plants (ROTAP) classification 3RCa.

Mongarlowe mallee (*Eucalyptus recurva*: Critically Endangered under the TSC Act and EPBC Act) is also known from one single-plant population in the Windellama area. This population occurs on private land, and as such, is not considered further in this report.

1.1.1 Saving our Species program

The *Saving our Species* program sets out the NSW Government's threatened species management strategy to secure NSW's threatened species in the wild for the next 100 years (OEH 2017b).

The *Saving our Species* program:

- consults extensively with experts and applies independent peer reviewed science to species, populations and ecological communities projects
- takes a rigorous and transparent approach to prioritising investment in projects that ensure benefit to the maximum number of species
- provides targeted conservation projects that set out the actions required to save specific plants and animals on mapped management sites
- regularly monitors the effectiveness of projects so they can be improved over time
- encourages community, corporate and government participation in threatened species conservation by providing a website and a database with information on project sites, volunteering and research opportunities.

The *Roadside threatened and significant flora of the Windellama district* report seeks to deliver a targeted conservation outcome for the *Saving Our Species* program through assisting Goulburn Mulwaree Council in the management of roadside threatened flora populations in a known threatened flora hotspot.

This report aims to directly satisfy the following objectives under the *Saving our Species* program:

Table 1 Objectives directly satisfied in the report

Species	Action ID	Threat	Objective
Few-seeded bossiaea	4142	Habitat loss associated with roadworks	Minimise accidental damage on road/track edges
Michelago parrot-pea	2020	Habitat disturbance during road maintenance	Minimise accidental damage on road/track edges

Information collected as part of this study will also contribute to satisfying other *Saving our Species* objectives for the above species, including:

Table 2 Further objectives satisfied by information collected under the study

Species	Action ID	Threat	Objective
Few-seeded bossiaea	1844	Rural/residential/industrial development	Assess the condition of the species/species' habitat and evidence of the effects of degrading land use practices
Few-seeded bossiaea	2281	Rural/residential/industrial development	Monitor for evidence of direct disturbance on the species at the sites
Few-seeded bossiaea	4231	N/A. Monitoring	Establish monitoring plots on road verges (secure tenure).
Michelago parrot-pea	1374	Road/track works	Monitor for evidence of direct disturbance on the species at the sites
Michelago parrot-pea	1375	Uncertainty of future land management practices	Assess the condition of the species/species' habitat and evidence of the effects of degrading land use practises
Michelago parrot-pea	2238	N/A. Monitoring	Inspection of roadside populations annually. Counts every 3 years any time of year. Initial set up – 1 day per site

Due to the broader distribution of matted bush-pea and the relatively low abundance in the Windellama area, the study area is not considered a priority site for this species. However, implementing the above actions for few-seeded bossiaea and Michelago parrot-pea will also contribute to the long-term conservation of this species.

Wolgan snow gum is not listed under the TSC Act and is, therefore, not considered under the *Saving our Species* program. However, it is still considered to be a plant species of conservation significance that requires careful management of its habitat.

1.1.2 Legislative context

Threatened Species Conservation Act 1995 (NSW)

The TSC Act is the key legislation that defines and protects threatened species, populations, ecological communities and critical habitat in New South Wales (OEH 2017c). The TSC Act, administered by the NSW Office of Environment and Heritage (OEH), aims to:

- conserve biological diversity and promote ecologically sustainable development
- prevent the extinction and promote the recovery of threatened species, populations and ecological communities
- protect habitat critical to the survival of endangered species, populations and ecological communities
- eliminate or manage certain key threatening processes that threaten the survival or evolution of threatened species, populations and ecological communities
- ensure the impact of any action affecting threatened species, populations and ecological communities is properly assessed, and
- encourage the conservation of threatened species, populations and ecological communities through cooperative management.

The TSC Act protects the habitat of threatened species, endangered populations and threatened ecological communities. Through Part 8A of the NSW *National Parks and Wildlife Act 1974*, the TSC Act also prohibits the illegal harming, picking, possessing, buying or selling of threatened species.

On 1 July 2017, the TSC Act was repealed and incorporated into the new *Biodiversity Conservation Act*. The legislative change will have no bearing on information presented within this report.

Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)

The EPBC Act is the Australian Government's central piece of environmental legislation. It provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places – defined in the EPBC Act as matters of national environmental significance (MNES) (OEH 2017d). The Act, administered by the Commonwealth Department of the Environment and Energy:

- provides for the protection of the environment, especially MNES
- conserves Australian biodiversity
- provides a streamlined national environmental assessment and approvals process
- enhances the protection and management of important natural and cultural places
- controls the international movement of plants and animals (wildlife), wildlife specimens and products made or derived from wildlife
- promotes ecologically sustainable development through the conservation and ecologically sustainable use of natural resources
- recognises the role of Indigenous people in the conservation and ecologically sustainable use of Australia's biodiversity, and
- promotes the use of Indigenous peoples' knowledge of biodiversity with the involvement of, and in cooperation with, the owners of the knowledge.

Rare or Threatened Australian Plants

The ROTAP classification (Briggs & Leigh 1996) is a flora classification developed prior to state and Commonwealth biodiversity legislation, which provides a conservation rating based on geographic restriction, rarity and adequacy of protection within proclaimed reserves. There are no legislative requirements to protect plants listed under this classification only; however, it is considered best practice to protect these species where possible.

1.2 Project scope

The project aims to satisfy the following objectives:

- determine the roadside distribution of threatened flora listed under the TSC Act and ROTAP classification within the Windellama district (study area, Figure 1)
- provide guidance to Goulburn Mulwaree Council on management actions to ensure that roadside threatened flora populations are protected, and
- estimate the abundance of conspicuous threatened flora on private land within the viewshed of the study area as determined through roadside visual assessment.

1.3 Study area

The study area is in the Windellama district in the Goulburn Mulwaree local government area, NSW Southern Tablelands (see Figure 1). It includes roadside areas known to have high densities of rare or threatened flora including Claypit Road, Durkin Road, Jerralong Road, Nerrimunga Creek Road, Oallen Ford Road (part), Spa Road, Wolgan Road and Yarralaw Road.

The study area was restricted to roadside areas, although opportunistic observations on private land were made from roadside sites.

The study area is largely characterised by low rolling rises and flats on clastic sediments (gravels, sands, silts and mudstones) of the Quaternary and early Ordovician period. The vegetation is generally dry sclerophyll forest dominated by brittle gum (*Eucalyptus mannifera*), scribbly gum (*E. rossii*), broad-leaved peppermint (*E. dives*) and red stringybark (*E. macrorhyncha*) with a shrub/grass understorey. Alluvial flats and adjacent areas are generally cleared, but where intact, contain eucalypts such as yellow box (*E. melliodora*) and argyle apple (*E. cinerea*) with a grassy understorey.

Due to the presence of large core areas of habitat, the study area is also home to a number of threatened fauna species, including the koala and a number of woodland birds such as glossy black-cockatoo, gang-gang cockatoo, brown treecreeper, speckled warbler, white-fronted chat, varied sittella, dusky woodswallow, hooded robin, scarlet robin, flame robin and diamond firetail.

1.4 Limitations

Survey was undertaken through vehicular observations, with roadside survey when plants were observed from the vehicle. While few-seeded bossiaea, Michelago parrot-pea and Wolgan snow gum are conspicuous even when not in flower, it is possible that isolated plants were not recorded. Matted bush-pea is less conspicuous, and may be confused with other groundcover peas when not in flower. Targeted survey was undertaken during the flowering period for this species, but it is possible that isolated occurrences were missed.

1.5 Acknowledgements

Survey and reporting was undertaken by Rob Armstrong (OEH Ecosystems and Threatened Species Section, Regional Operations Division, South-east Branch). Rob was assisted in field survey by Debbie Hunt and Nat O'Rourke (OEH *Saving our Species* Hub, South). Keith McDougall (OEH) provided initial project guidance. Jackie Miles (consultant botanist) collected previous survey data that was utilised in this study.

As part of cataloguing roadside rare and threatened flora values, consultation was undertaken with staff at Goulburn Mulwaree Council including Jack Miller and Andrew Cartwright.

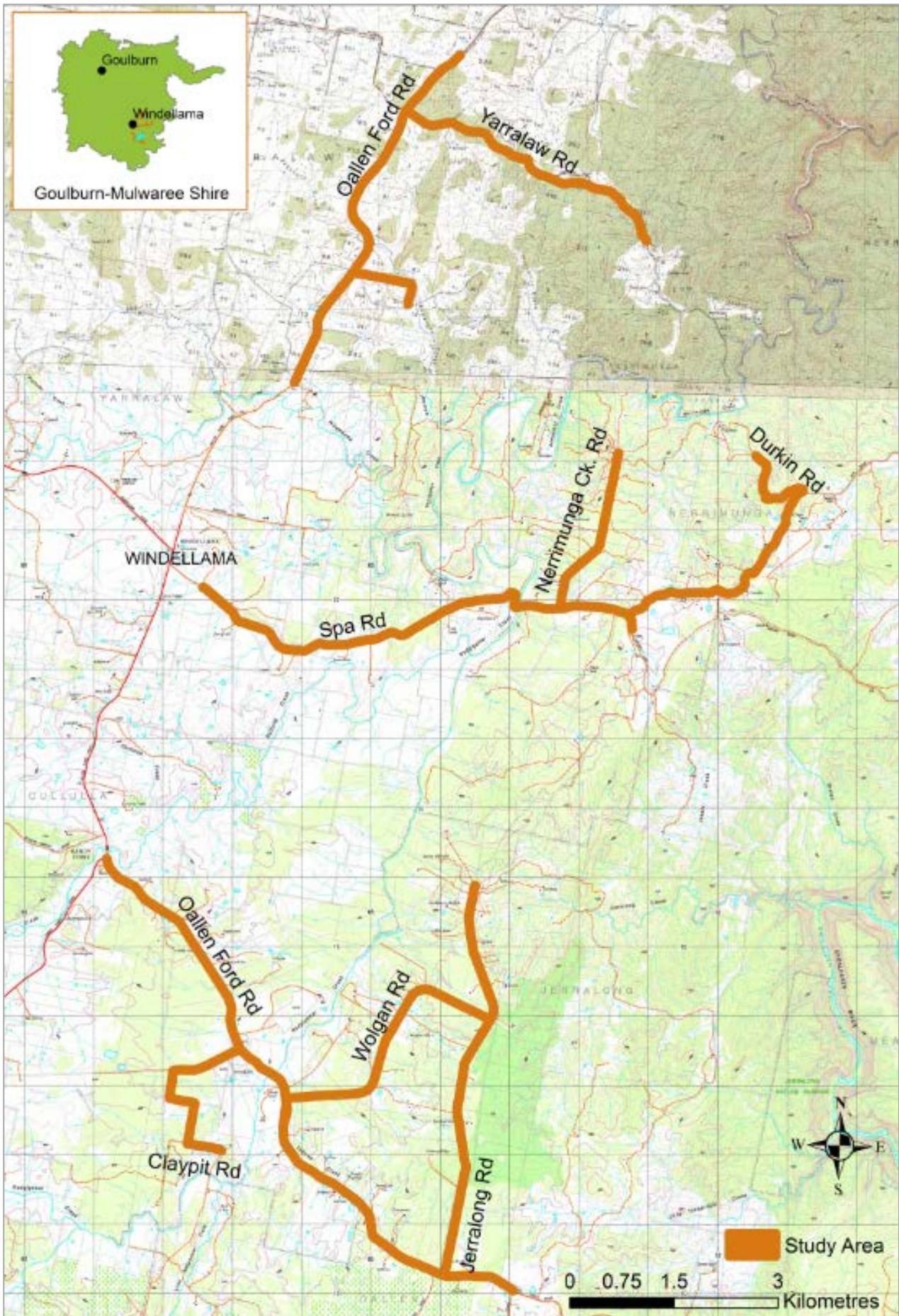


Figure 1 Study area

2. Species

Unless indicated otherwise, the below information is sourced from the NSW Threatened Species website (OEH 2017e).

2.1 Few-seeded bossiaea (*Bossiaea oligosperma*)

Conservation status (NSW): Vulnerable

Conservation status (Commonwealth): Vulnerable

ROTAP status: 2V



Few-seeded bossiaea (*Bossiaea oligosperma*) Photo: John Briggs/OEH

Description

The few-seeded bossiaea is an **erect shrub to 2 m** high. The **small, almost circular, bright-green leaves** are between 2.5 and 5 mm long. The **8–11 mm long pea flowers** appear in late spring. The wings (upper, larger petal) are bright yellow with some red markings, the keel (lower, fused, smaller petals) is dark red. The **pod is elliptical and up to 17 mm** long. The **bark of mature plants is distinctively flaky**. Few-seeded bossiaea may be confused with Spiny Bossiaea (*Bossiaea obcordata*), a common pea in eastern New South Wales, but spiny bossiaea has spiny branches and is generally a smaller plant.

Distribution

The few-seeded bossiaea is known from two disjunct areas - the lower Blue Mountains in the Warragamba area (Wollondilly, Allum and Tonalli River catchments) and the Windellama area in Goulburn Mulwaree Shire, where it is locally abundant. A 1960s record for the Araluen Valley south of Braidwood is credible but has not been relocated.

Habitat and ecology

In the Windellama area, it occurs in low dry sclerophyll forest on loamy soil. Little is known about its ecology but it probably has hard-coated seeds that respond well to fire and soil disturbance.

Threats

- Frequent fire in the northern part of its range. It is likely few-seeded bossiaea has evolved to cope with infrequent fires
- Clearing associated with rural residential developments in the southern part of its range
- Roadworks causing habitat loss

2.2 Michelago parrot-pea (*Dillwynia glauca*)

Conservation status (NSW): Endangered

Conservation status (Commonwealth): Not listed

ROTAP status: 3V



Michelago parrot-pea (*Dillwynia glauca*) Photo: Debbie Hunt/OEH

Description

Michelago parrot-pea is an **erect shrub to 2.5 m** tall. Its leaves are up to 7 mm long and very narrow; they are hairless, becoming **bluish-green with age**. The yellow and red pea-like flowers are borne singly in the axils of the leaves and are clustered towards the ends of the branchlets. The base (calyx) of the flower is up to 6 mm long, with lobes at the top that are shorter than the tube. The fruits are reddish-brown pods to 5.5 mm long and 4 mm wide, and white-hairy towards the tip.

Distribution

Michelago parrot-pea is recorded from five areas on the NSW Southern Tablelands: near Windellama, where the species is locally abundant; near Mongarlowe; in Nadgigomar Nature Reserve near Braidwood; north-east of Michelago; and at Numeralla. There is potential habitat between the known sites.

Habitat and ecology

- Michelago parrot-pea occurs on exposed patches of clay or on rocky outcrops in eucalypt woodland often dominated by scribbly gum (*Eucalyptus rossii*), snow gum (*E. pauciflora*), broad-leaved peppermint (*E. dives*) and red stringybark (*E. macrorhyncha*).
- The understorey may be either grassy or shrubby.
- It grows adjacent to natural temperate grassland in the Michelago area.
- Michelago parrot-pea is probably killed by fire and regeneration would be from seed stimulated to germinate by the cracking of the seed coat by fire or by physical abrasion.

Threats

- Clearing habitat in rural-residential subdivisions
- Grazing and trampling by stock causing root damage, prevention of seedling establishment and erosion
- Improving pasture
- Maintaining roads causing habitat disturbance
- weeds and roadside spraying of herbicides for weed and fire control
- Using off-road vehicles and dumping illegally
- Browsing by goats and possibly macropods
- For populations on private land, creating pasture, clearing and subdividing rural land may be threatened by

2.3 Matted bush-pea (*Pultenaea pedunculata*)

Conservation status (NSW): Endangered

Conservation status (Commonwealth): Not listed

ROTAP status: N/A



Matted bush-pea (*Pultenaea pedunculata*) Photo: Murray Fag/Australian National Botanic Gardens
Inset: Jack Miller/Goulburn Mulwaree Council

Description

The matted bush-pea is a groundcover shrub that **forms carpets 1 m or more wide**, having branches that may be several metres long but usually less than 20 cm off the ground. The stems are appressed-pubescent with whitish hairs. Its small leaves are flat and elliptical, to 11 mm long and 2 mm wide, with a darker upper surface, a recurved point at the tip and stipules 2–3 mm long. The pea-shaped flowers are small (4–8mm long), and mostly yellow in New South Wales, though apricot and orange flowered populations are also known. The **flowers are near the ends of the branches, held singly on long stalks (often to 20 mm long)**, with linear to linear-ovate, hairless bracteoles and a sparsely hairy calyx 3–5 mm long with acuminate lobes. The fruit is 5–7 mm long, globular to egg-shaped.

Distribution

Matted bush-pea is widespread in Victoria, Tasmania, and south-eastern South Australia. In New South Wales, however, it is represented by just three disjunct populations: in the Cumberland Plains in Sydney; the coast between Tathra and Bermagui; and the Windellama area south of Goulburn (where it is locally abundant). The Cumberland Plain occurrences were more widespread (Yennora, Canley Vale and Cabramatta were lost to development)

and it is now found at Villawood and Prestons, and north-west of Appin between the Nepean River and Devines Tunnel number 2 (Upper Sydney Water Supply Canal).

Habitat and ecology

- The matted bush-pea occurs in a range of habitats. NSW populations are generally among woodland vegetation but plants have also been found on road batters and coastal cliffs. It is largely confined to loamy soils in dry gullies in populations in the Windellama area, but also on road batters in this location.
- The ability of stems to creep and root from the nodes has made this species a very good coloniser of bare ground in many parts of its range.
- Flowers appear in spring (August to December), with fruit maturing from October to January but sometimes persistent on the plant until April–May. Like other *Pultenaea* species, the seeds have an aril and are likely to be dispersed by ants. Few young plants have been seen (no seedlings) and the suggestion is that there will be germination after disturbance as well as after fire, although the fire response is unknown
- In the Windellama area, it generally grows in creek lines within grassy woodland dominated by brittle gum. Broad-leaved peppermint and Wolgan snow gum are also often present and a few populations occur within scribbly gum–red stringybark open forest.
- The prostrate nature of the species makes it sensitive to overshadowing by taller plants and tussock grasses. There is uncertainty about whether the species is capable of resprouting from the base following disturbance.

Threats

- Clearing for urban, small-rural-lot development causing loss of habitat
- Introducing non-native pasture species causing loss of habitat
- Poor understanding of recruitment, responses to environmental conditions and management practices
- Maintaining roads, trails and powerlines causing habitat disturbance
- Access by recreational users transporting weeds and degrading the habitat; including localised clearing of vegetation
- Habitat invasion by invasive grasses including serrated tussock (*Nassella trichotoma*), paspalum (*Paspalum dilatatum*) and African love grass (*Eragrostis curvula*)
- The species population structure and distribution possibly causing low genetic diversity
- Absence of fire, or fire of low frequency, if germination is fire-dependent. With an extended period between fires there can be a loss of genetic diversity and failure to recruit owing to seed attrition over time

2.4 Wolgan snow gum (*Eucalyptus gregsoniana*)

Conservation status (NSW): Not listed

Conservation status (Commonwealth): Not listed

ROTAP status: 3RCa



Wolgan snow gum (*Eucalyptus gregsoniana*) Photo: Rob Armstrong/OEH

Description

Wolgan snow gum is a **many-stemmed tree/shrub (mallee) to 5 m** high. Its bark is smooth and grey or white, shedding in short ribbons. The glossy grey-green leaves are disjunct lance-shaped, 7–11 cm long and 1.2–2.5 cm wide with almost **parallel veins**. Flowers are cream in colour, with the buds/fruits arranged in clusters of 7–11. Fruits are pear-shaped or conical (PlantNet 2017).

Distribution

Sporadic and scattered, it is known to occur in locations including the Newnes Plateau, Wadbilliga and Windellama (PlantNet, 2017; Brooker & Kleinig 2006).

Habitat and ecology

Little is known about the habitat and ecology of this species; however, it occurs in mallee heath on sandy soils of limited drainage in elevated areas (PlantNet 2017).

Threats

- Poorly known overall
- Disjunct locations, likely causing stochastic events and genetic isolation
- Clearing roadside vegetation and installing/maintaining culverts in drainage depressions

3. Methodology

3.1 Desktop review

Prior to undertaking vehicular and roadside survey, a desktop review was undertaken to collate information on the current known distribution of target species within the study area. Information reviewed included:

- NSW BioNet (Wildlife Atlas) records (OEH 2016)
- Australian Virtual Herbarium records (AVH 2016)
- Unpublished field notes from a survey commissioned by NSW Government in October 2000 (Miles unpub).

3.2 Vehicular and roadside survey

The study area (Figure 1) was surveyed using vehicular traverses, generally travelling at a speed of approximately 20 km/hr. At times, the speed was increased on Oallen Ford Road for safety reasons; however, this road was driven several times to ensure all visible populations were captured.

Georeference information for the start and end point of each rare or threatened plant population was recorded in GDA94/MGA55, with notes taken on actual or estimated population numbers, the side of the road the species occurs on, and the likely threats at a given location. Dominant plants occurring in each strata were also recorded, along with other basic habitat descriptors.

Survey was undertaken at varying stages between August 2016 and January 2017, with a concerted effort to survey for the more cryptic matted bush-pea in October and November 2016.

3.3 Mapping

Mapping of rare and threatened plants occurring in roadside populations was undertaken using ArcMap 10.1. Georeference information and field notes collected as part of the vehicular and roadside survey were used to define start and end points of individual plant populations. Information on abundance is contained within the shapefile attributes.

The following shapefile has been developed and provided to Goulburn Mulwaree Council:

Threatened_Road_Veg_Windellama_Feb2017.shp – polygon shapefile identifying the location of roadside threatened flora populations. Refer to **Appendix 1** for metadata.

4. Results and mapping

Few-seeded bossiaea was the most common and broadly distributed species in the study area, with scattered occurrences of Michelago parrot-pea and matted bush-pea. Wolgan snow gum was recorded as part of two small roadside populations. Through opportunistic (over the fence) observation, few-seeded bossiaea was also observed to be locally dominant on private land in some locations. Table 1 shows the species occurring on particular roads in the study area. Maps of the distribution of these species within the study area is shown in Figures 2 to 5.

Table 3 Presence of species on particular roadsides.

	Few-seeded bossiaea	Michelago parrot-pea	Matted bush-pea	Wolgan snow gum
Claypit Rd	✓	✓		✓
Durkin Rd	✓	✓	✓	
Jerralong Rd	✓		✓	
Nerrimunga Ck Rd	✓			
Oallen Ford Rd	✓	✓	✓	
Spa Rd	✓	✓		
Wolgan Rd	✓	✓	✓	✓
Yarralaw Rd	✓			

While not occurring within the study area, isolated occurrences of hoary sunray (*Leucochrysum albicans* var. *tricolor*; Endangered under the EPBC Act; ROTAP 3EC-) were observed within the road reserve on Oallen Ford Rd (west of the study area) and on Yarralaw Rd in a clearing at Leakes Gully (approximately 300 m past the end of the Yarralaw Rd study area, on the eastern side of Yarralaw Rd and on both sides of a driveway entrance to 'Yarralaw'). The latter record has been lodged with the NSW Wildlife Atlas.

Population estimates were gathered for each species at each location. As considerable variance can be expected due to the census method requiring levels of estimation, it is conservatively estimated that 200,000 to 500,000 few-seeded bossiaea occur in the Windellama area within the viewshed of the survey area. The majority of these are on private land around the Nerrimunga Creek Rd and Wolgan/Jerralong Rd areas, where they occur in dense clumps across large areas estimated to contain >5000 plants per hectare; further survey on private land is required to quantify distribution and density. Substantial roadside populations are also present.

Michelago parrot-pea is less common in the study area, although it is found in populations of around 250 adjacent to the roadbase quarry on the intersection of Claypit Rd and Oallen Ford Rd and around 500 on a road cutting and adjacent private land on Wolgan Rd.

As a species that is known to colonise bare ground, matted bush-pea was recorded colonising road batters along Durkin Rd, Jerralong Rd, Wolgan Rd and Oallen Ford Rd in low numbers. This species may be more common due to difficulties in recording this species with the survey method employed (as was necessary over a large study area).

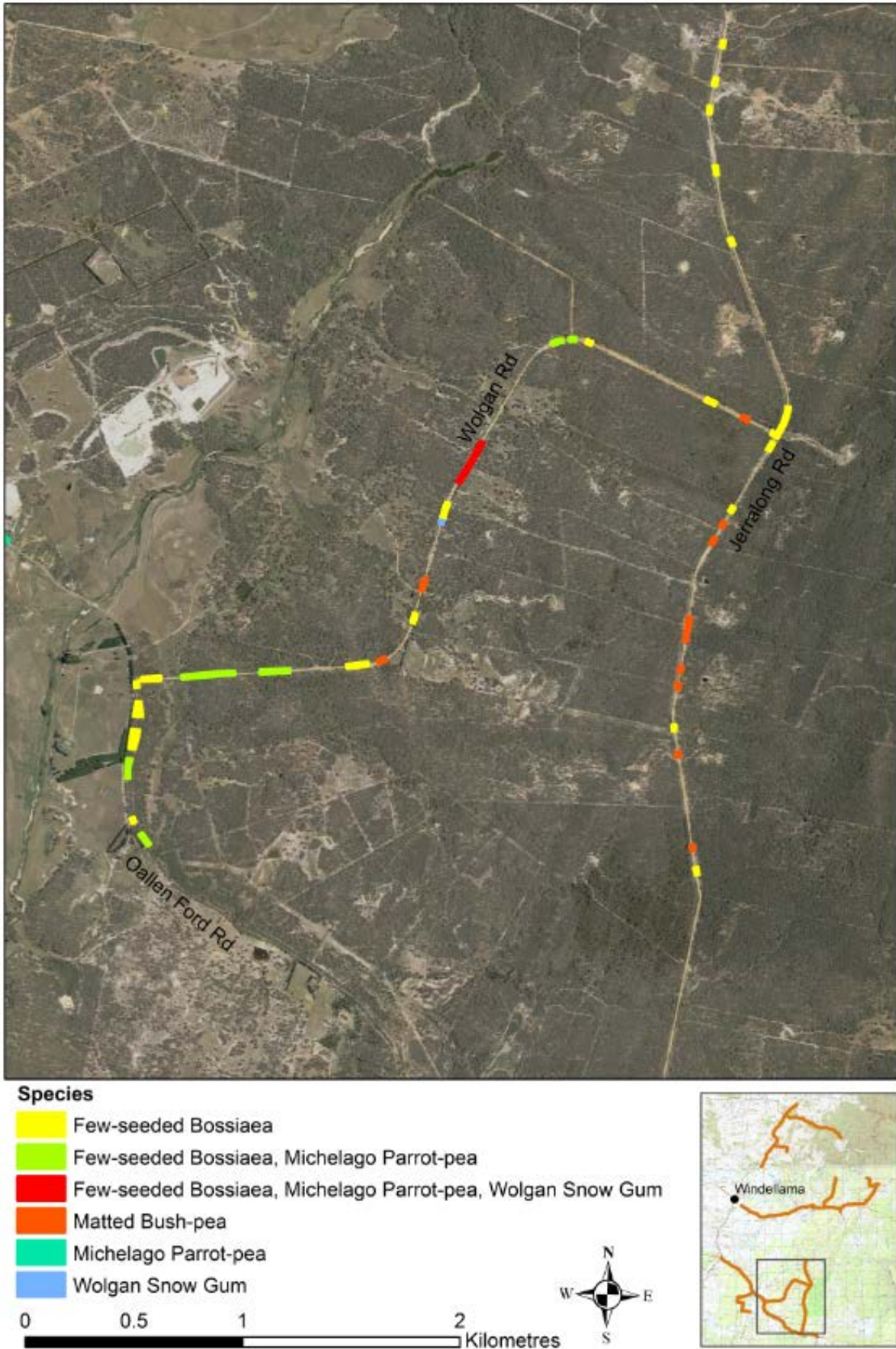


Figure 2 Rare and threatened flora locations, Wolgan Rd Area

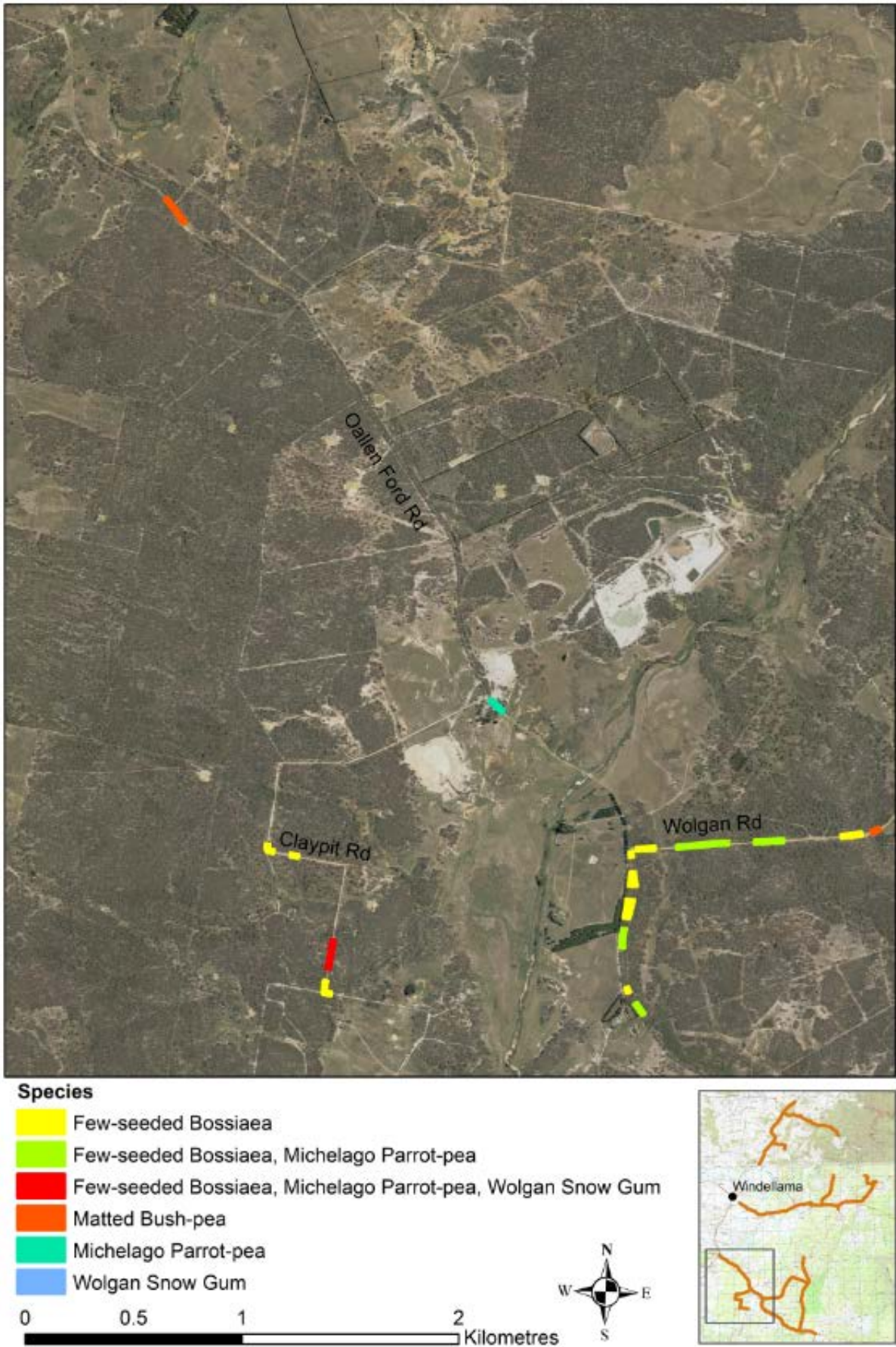


Figure 3 Rare and threatened flora locations, Claypit Rd and Oallen Ford Rd (south) area.

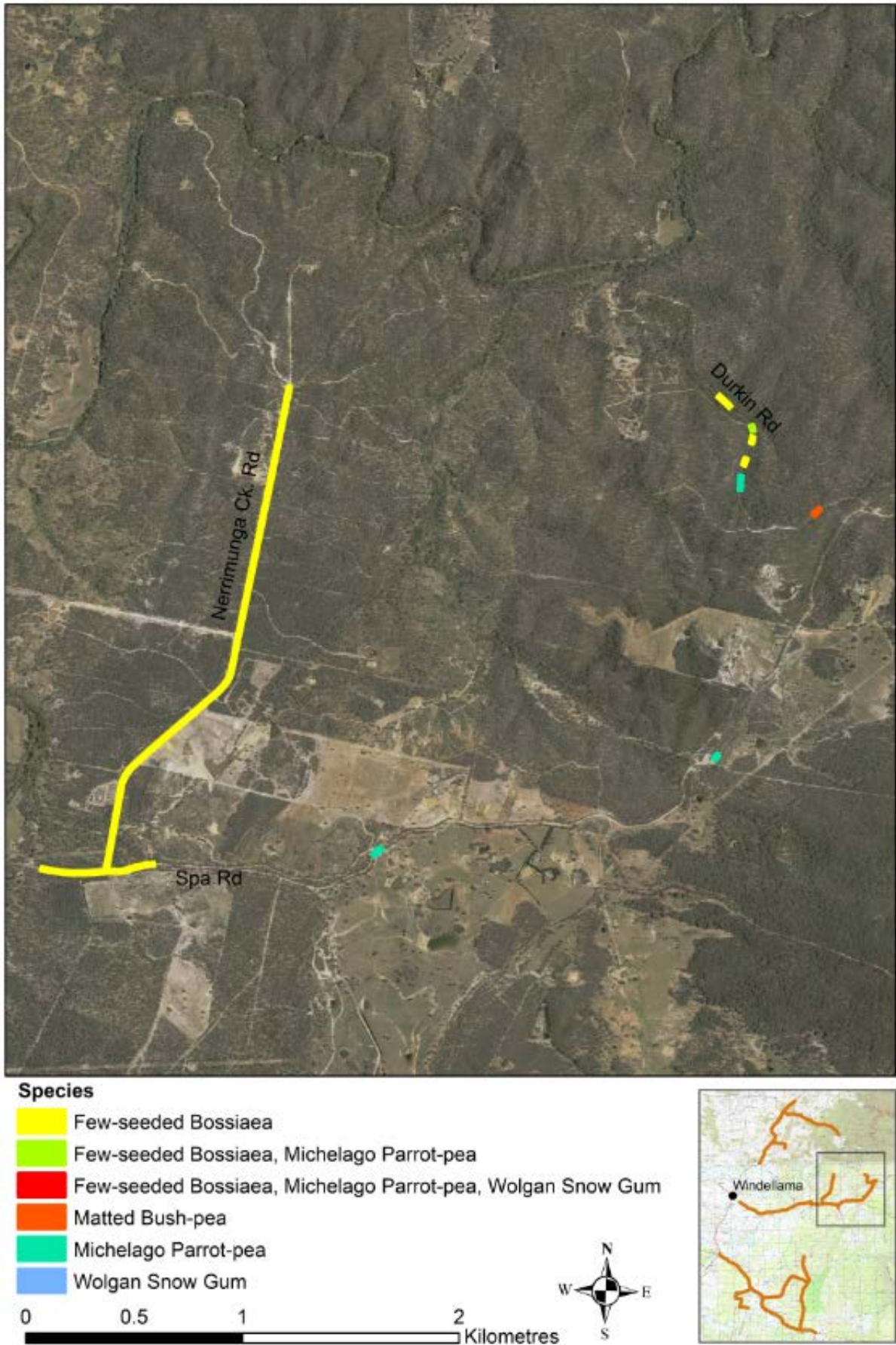


Figure 4 Rare and threatened flora locations, Nerrimunga Ck Rd and Durkin Rd area.

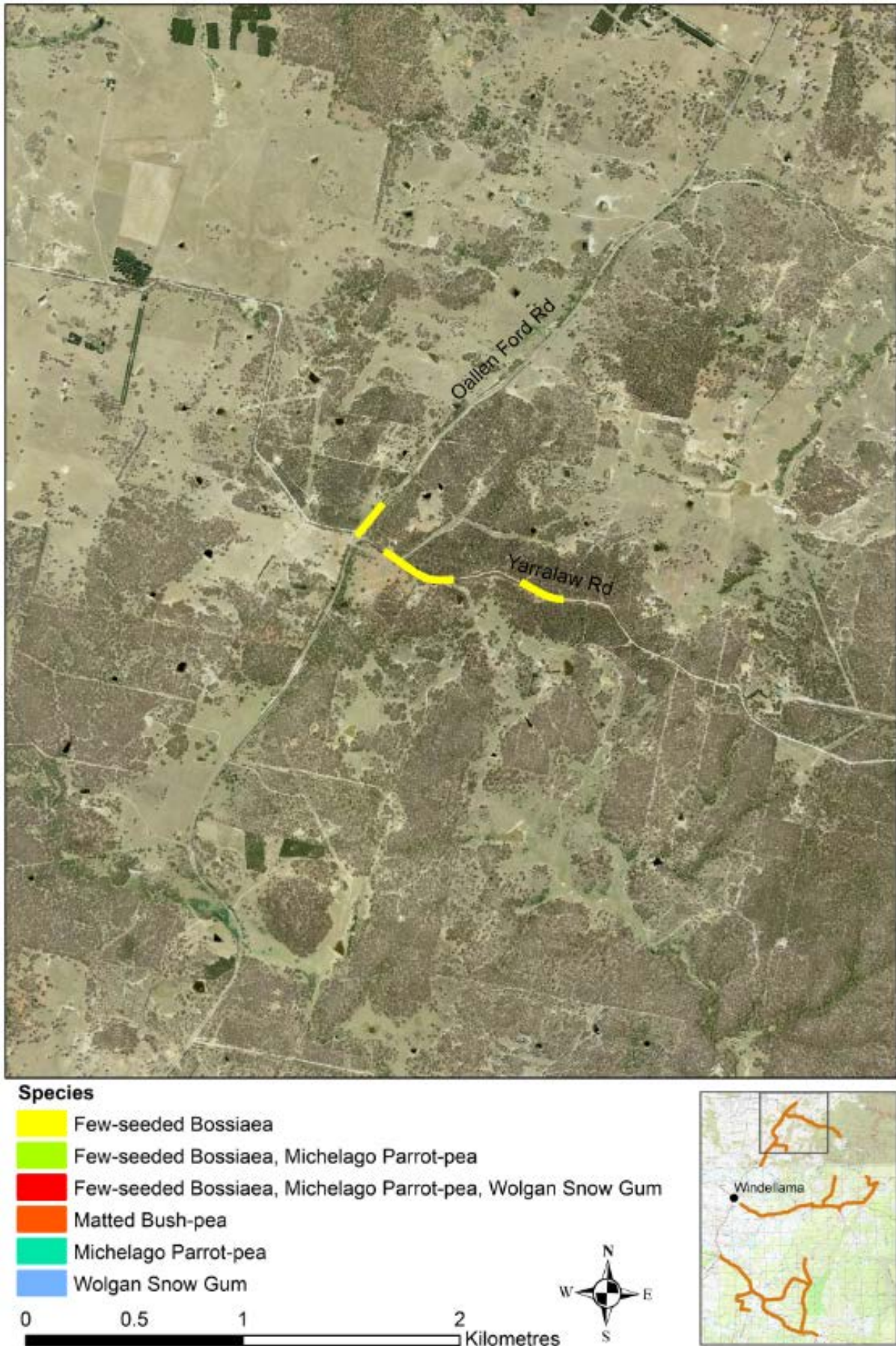


Figure 5 Rare and threatened flora locations, Yarralaw Rd area.

5. Recommendations

The survey confirms that there are large areas of roadside vegetation containing rare or threatened flora in the Windellama district. To protect these values, the following is recommended:

- Goulburn Mulwaree Council and OEH will work together to develop a suitable approach to protect roadside vegetation containing rare and threatened flora.
Approaches may include consideration of information in this report when planning road upgrade and maintenance, signage, signal posts, and road-worker/contractor briefing prior to works being undertaken.
- Should larger information signage be required at key sites, OEH should develop these in conjunction with Goulburn Mulwaree Council, with OEH to seek funding, where available, for sign development and installation. OEH will also seek funding, where available, for lesser infrastructure such as signal posts.
- OEH threatened species and planning staff will provide ecological and planning advice to Goulburn Mulwaree Council on road upgrades where appropriate and required, including for field extension days or other communication as appropriate.
- This document should be provided to road-workers/contractors prior to any work being undertaken (or GIS data included with this report should be used to prepare maps for road-workers/contractors).
- Further survey should be undertaken by OEH as opportunities arise on private land to quantify the distribution of threatened flora on private land, and OEH should work with landholders to develop private land conservation projects.
- This document should be reviewed every five years by both OEH and Goulburn Mulwaree Council (review to be facilitated by OEH).

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- Office of Environment and Heritage 2017e, www.environment.nsw.gov.au/threatenedspeciesapp/ [accessed 19 October 2017].
- PlantNET (The NSW Plant Information Network System), Royal Botanic Gardens and Domain Trust, Sydney 2017, <http://plantnet.rbgsyd.nsw.gov.au/cgi-bin/NSWfl.pl?page=nswfl&lvl=sp&name=Eucalyptus~gregsoniana> [accessed 22 August 2017].

Appendix 1 – GIS Metadata

Metadata category	Core metadata element	Description
Dataset	Title	Threatened_Road_Veg_Windellama_Feb2017.shp
	Custodian	NSW Office of Environment and Heritage
	Jurisdiction	New South Wales, Australia
	Identifier	N/A
Description	Abstract	GIS file associated with: OEH (2017) Threatened and Significant Flora of roadsides of the Windellama District. NSW Office of Environment and Heritage. Report OEH2017/0235. The report outlines the distribution of rare and threatened flora populations in the Windellama district, namely <i>Bossiaea oligosperma</i> (few-seeded bossiaea), <i>Dillwynia glaucula</i> (Michelago parrot-pea), <i>Pultenaea pedunculata</i> (matted bush-pea) and <i>Eucalyptus gregsoniana</i> (Wolgan snow gum).
	Search Word(s)	ECOLOGY Non-specific, ECOLOGY Habitat, FLORA Non-specific, FLORA Native, VEGETATION Non-specific, V
	Geographic extent name(s)	The roadside vegetation survey covers much of the Windellama area east of Oallen Ford Road, including Wolgan Road, Jerralong Road, Claypit Road, Spa Road, Nerrimunga Creek road, Durki Road and Yarralaw Road.
	Geographic extent polygon(s)	North-bound latitude: -34.956785 East-bound longitude: 149.972409 South-bound latitude: -35.117132 West-bound longitude: 149.863970
Data currency	Beginning date	All information is current up until 1 February 2017
	End date	1/2017
Dataset status	Progress	complete
	Maintenance and update frequency	unplanned
Access	Stored data format	Vector shapefile. GDA94 zone 55
	Available format types	Digital
	Access constraints	NFI use only
Data quality	Lineage	Developed from georeference data collected as part of this study
	Positional accuracy	+/- 5 m GPS accuracy
	Attribute accuracy	High
	Logical consistency	N/A
	Completeness	Complete
Contact address	Contact organisation	NSW Office of Environment and Heritage
	Contact organisation jurisdiction	New South Wales, Australia
	Contact position	Data Broker
	Mail address 1	PO Box 3720
	Mail address 2	n/a
	Suburb/place/locality	Parramatta
	State/locality 2	New South Wales
	Country	Australia
	Postcode	2124
	Telephone	02 6740 2349
	Facsimile	02 6742 3149
Electronic mail address	data.broker@environment.nsw.gov.au	

Threatened and significant flora of roadsides in the Windellama district

Metadata category	Core metadata element	Description
Additional metadata and date	Metadata date	23/02/2017
	Additional metadata	The data is also available through the Vegetation Information System (http://www.environment.nsw.gov.au/research/Vegetationinformationsystem.htm) Email: vis@environment.nsw.gov.au
Extended description details	Type of feature	Vector
	Attribute/field list	FID; Shape; RoadNameBa; Bossiaea; Dillwynia; Pultenaea; E_gregsoni; Species.
	Attribute/field description	FID: <i>Primary key</i> Shape: <i>Polygon</i> RoadNameBa Bossiaea: Abundance and density notes on Few-seeded bossiaea (<i>Bossiaea oligosperma</i>) at a given location Dillwynia: Abundance and density notes on Michelago parrot-pea (<i>Dillwynia glaucula</i>) at a given location Pultenaea: Abundance and density notes on matted bush-pea (<i>Pultenaea pedunculata</i>) at a given location E_gregsoni: Abundance and density notes on Wolgan snow gum (<i>Eucalyptus gregsoniana</i>) at a given location Species" Aggregate of species present in a given location
	Attribute percentage completeness	100%
	Scale/resolution	Accurate to within 5 m
	Methods	On-screen digitisation using ArcGIS 10.1 software.
	Tenure	Roadside (public land)
Dataset environment	Software	ArcGIS 10.1
	Computer operating system	Intel® Xeon® CPU E5-2605 v3 @ 1.60GHz, 64-bit Operating System
	Dataset size	310 KB