Abridged Threatened Species Nomination Form

For nominations/assessments under the Common Assessment Method (CAM) where supporting information is available, but not in a format suitable for demonstrating compliance with the CAM, and assessment against the IUCN Red List threat status.

Cover Page *(Office use only for Assessment)*

Species name (scientific and common name)**:**	***Leucopogon nitidus* Hislop**
Nomination for (addition, deletion, change)**:**	**Addition**
Nominated conservation category and criteria:	**EN: D**

Scientific committee assessment of eligibility against the criteria:		
This assessment is consistent with the standards set out in Schedule 1, item 2.7 (h) and 2.8 of the Common Assessment Method Memorandum of Understanding.		Yes ☐ No ☐
A.	Population size reduction	•
B.	Geographic range	•
C.	Small population size and decline	•
D.	Very small or restricted population	•
E.	Quantitative analysis	•

Outcome*:*			
Scientific committee Meeting date:			
Scientific committee comments:			
Recommendation:			
Ministerial approval:		*Date of Gazettal/ Legislative effect:*	

Nomination/Proposal summary *(to be completed by nominator)*

Current conservation status				
Scientific name:	*Leucopogon nitidus* Hislop			
Common name:	None			
Family name:	Ericaceae	Fauna ☐	Flora ☒	
Nomination for:	Listing ☒	Change of status/criteria ☐	Delisting ☐	
1. *Is the species currently on any conservation list, either in a State or Territory, Australia or Internationally?* 2. *Is it present in an Australian jurisdiction, but not listed?*	*Provide details of the occurrence and listing status for each jurisdiction in the following table*			

Jurisdiction	**State / Territory in which the species occurs**	**Date listed or assessed (or N/A)**	**Listing category i.e. critically endangered or 'none'**	**Listing criteria i.e. B1ab(iii)+2ab(iii)**
International (IUCN Red List)				
National (EPBC Act)				
State / Territory	1. WA	2014	Endangered	D
	2.			
	3.			

Consistent with Schedule 1, item 2.7 (h) and 2.8 of the Common Assessment Method Memorandum of Understanding, it is confirmed that:		
• this assessment meets the standard of evidence required by the Common Assessment Method to document the eligibility of the species under the IUCN criteria;		Yes ☒ No ☐
Comments:	A rare species growing in an extensively cleared area with limited available habitat.	
• surveys of the species were adequate to inform the assessment;		Yes ☒ No ☐
Comments:	There have been no further surveys of the species since 2013.	
• the conclusion of the assessment remains current and that any further information that may have become available since the assessment was completed supports or is consistent with the conclusion of the assessment.		Yes ☒ No ☐
Comments:	Assessment is consistent, criteria remains current.	

Nominated national conservation status: category and criteria			
Presumed extinct (EX) ☐	Critically endangered (CR) ☐	Endangered (EN) ☒	Vulnerable (VU) ☐
None (least concern) ☐	Data Deficient ☐	Conservation Dependent ☐	

What are the IUCN Red List criteria that support the recommended conservation status category?	**D**

Eligibility against the IUCN Red List criteria (A, B, C, D and E)

*Provide justification for the nominated conservation status; is the species eligible or ineligible for listing against the five criteria. For **delisting**, provide details for why the species no longer meets the requirements of the current conservation status.*

A.	Population size reduction (evidence of decline)	• Insufficient information is available to reliably show rate of decline as the subpopulation has only been fully surveyed on one occasion.
B.	Geographic range (EOO and AOO, number of locations and evidence of decline)	• Known from 1 location, extent of occurrence and area of occupancy is less than 4 km^2. • Insufficient information available to reliably show fluctuations or continuing decline in this species.
C.	Small population size and decline (population size, distribution and evidence of decline)	• Known from 84 plants at one site. Small population size renders the species vulnerable to stochastic events such as fire and drought. • Subpopulation only fully surveyed in 2013; therefore, long term population trends are not able to be determined. • Decline in condition of habitat not known.
D.	Very small or restricted population (population size)	• 84 plants known to exist in one population. • **Meets En: D**
E.	Quantitative analysis (statistical probability of extinction)	• No data

Summary of assessment information

EOO	4 km^2	AOO	4 km^2 (using 2x2 grid method)	Generation length	-

No. locations	1	Severely fragmented	Yes ☐ No ☒ Unknown ☐
No. subpopulations	1	No. mature individuals	84
Percentage global population within Australia		100	
Percentage population decline over 10 years or 3 generations		unknown	

Threats *(detail how the species is being impacted)*

Threat *(describe the threat and how it impacts on the species. Specify if the threat is past, current or potential)*	Extent *(give details of impact on whole species or specific subpopulations)*	Impact *(what is the level of threat to the conservation of the species)*
Refer to table at end.		

Management and Recovery	
Is there a Recovery Plan (RP) or Conservation Management Plan operational for the species?	Yes ☒ No ☐

List all relevant recovery or management plans (including draft, in-preparation, out-of-date, national and State/Territory recovery plans, recovery plans for other species or ecological communities, or other management plans that may benefit or be relevant to the nominated species).

- Department of Parks and Wildlife (in prep) *Leucopogon nitidus* Draft Interim Recovery Plan 2015–2020. Interim Recovery Plan No. #. Department of Parks and Wildlife, Western Australia.

List current management or research actions, if any, that are being undertaken that benefit the conservation of the species.

- Liaise with private land owners to protect the remnant vegetation on which the species occurs, including through the placement of a National Trust covenant on the property.
- Monitor the population for evidence of rabbit, kangaroo or weed impacts, or changes in plant or site health.
- Protect the site from fire unless required for ecological reasons, and implement early intervention in any wildfires which may threaten the site.
- Protect the existing population from grazing by stock through maintaining the fence.
- Survey for additional populations.

List further recommended management or research actions, if any, that would benefit the conservation of the species. Please ensure that this section addresses all identified threats.

Management

- Control rabbits if evidence of a rabbit population or herbivory noted;
- Control infestations by weeds that might impact the population;
- Erect protective fencing if kangaroo herbivory noted as a significant threat;
- Collect seed for storage and *ex situ* propagation.
- Establish new populations on secure tenure through implementation of translocations.

Research

- Determine species longevity and how long flowering continues and produce seed.
- Determine seed germination requirements and viability.

Nomination prepared by:	
Contact details:	
Date submitted:	20/6/2016

If the nomination has been refereed or reviewed by experts, please provide their names and contact details:

Summary of subpopulation information *(detailed information to be provided in the relevant sections of the form)*						
Location *(include coordinates)*	Land tenure	Survey information: Date of survey and No. mature individuals	AOO	Site / habitat Condition	Threats *(note if past, present or future)*	Specific management actions
Mount Julia, on private property Lot 2250 Sandsprings Rd	Private property	2013: 84	2 ha	Very good. Remnant has recovered well since stock exclusion in the 1990's.	Past • Land clearing • Livestock grazing Current • Rabbits • Kangaroos • Weeds Future • Small population size • Climate change	As above

Department of
Parks and Wildlife

Form to nominate a Western Australian species for listing as threatened, change of category or delisting 2014.

The purpose of this nomination form is to bring your nomination to the attention of the Western Australian Threatened Species Scientific Committee (TSSC) for its consideration and subsequent advice to the Minister for Environment, who makes the final decision on changes to the threatened species lists. Please read through both the guidelines and the nomination form to familiarise yourself with the information required before filling out the nomination form.

The assessment of the conservation status is according to IUCN red list category and criteria, and whilst it is a State listing process, the TSSC will consider the status of Western Australian species throughout their total natural range in Australia, and where appropriate (eg, for species that do not breed in Australia), their range and status outside Australia. Therefore, information provided in the nomination should include information on populations outside WA where applicable.

Note, this nomination form applies to both flora and fauna species, and hence some questions or options may not be applicable to the nominated species – for these questions, type "N/A".

Nominators should refer to:

DPaW Nomination Guidelines
IUCN (2001). IUCN Red List Categories and Criteria Version 3.1 (IUCN, Gland, Switzerland)
IUCN (2011). Guidelines for using the IUCN Red List Categories and Criteria. Version 9.0 (September 2011). www.iucnredlist.org

Nominations should be submitted (preferably in electronic format) to:

Species and Communities Branch
Department of Parks and Wildlife
Locked Bag 104
BENTLEY DC WA 6983

Telephone: (08) 9334 0455

Email: tssc@dpaw.wa.gov.au

TSSC meetings are usually held near the end of the first quarter of the calendar year. The closing date for nominations for TSSC meetings is the last Friday of January that year.

NOTICE: Incomplete forms may result in delays in assessment, or rejection of the nomination. DPaW staff can advise you on how to fill out the form and may be able to supply additional, unpublished information.

SECTION 1. NOMINATION

1.1. Nomination for:

Flora ☒ | **Fauna** ☐ | as: **Threatened / DRF** ☐ **Change of category** ☐ **Delisting** ☐

1.2. Scientific Name
This name will be used to identify the species on all official documentation. Use the approved name used by the Western Australian Museum or Herbarium, if possible.

Leucopogon nitidus Hislop

1.3. Common Name
If the species has a generally accepted common name, please show it here.

Suggested common name

1.4. Family Name

Ericaceae

1.5. Current Conservation Status. If none, type 'None'.

	IUCN Red List Category e.g. Vulnerable	**IUCN Red List Criteria e.g. B1ab(iv); D1**
International IUCN Red List	None	None
National EPBC Act 1999	None	None
State of Western Australia	None	None

State of WA Priority	1☒	2☐	3☐	4☐	5☐

1.6. Nominated Conservation Status.

	IUCN Red List Category e.g. Vulnerable	**IUCN Red List Criteria e.g. B1ab(iv);D1**
State of Western Australia	Endangered	D

State of WA Priority	1☐	2☐	3☐	4☐	5☐

Is the species listed as 'Threatened' in any other Australian State or Territory? If Yes, list these States and/or Territories and the status for each.

No ☒ **Yes** ☐ **Details:**

1.7. Reasons for the Nomination.
Briefly summarise the reasons for the nomination in dot points. Please include details relevant to the IUCN Category and each Criteria.

There is a very small population size with the current known population for *Leucopogon nitidus* recorded at 84 in total. This means the species fits IUCN criterion D as Endangered with <250 mature individuals.

SECTION 2. SPECIES

2.1. Taxonomy.
Describe the taxonomic history, using references, and describe the key distinguishing features that can be used to separate this taxon from closely related taxa. Include details of the type specimen, changes in taxonomy, scientific names and common names used for the species.

The species was first collected by Department of Parks and Wildlife volunteer Jenna Brooker in 2001 at which time no species name was assigned. The significance of the specimen was recognised following a taxonomic review by M. Hislop and the phrase name *Leucopogon* sp. Kojarena (J. Brooker 232) was raised in 2008. Further collections, including the eventual type specimen, were made that same year and the species was described as *Leucopogon nitidus* (Nuytsia 21: 79-82) in 2011.

Although as described in the above paper the closest relatives of *L. nitidus* are believed to be several mostly unnamed taxa from the Geraldton Sandplain, in its gross morphology it doesn't closely resemble any of these. The combination of narrow leaves with two deep abaxial grooves and a narrow fruit with long, antrorse appressed hairs in the lower half is diagnostic and easily distinguishes the species from any others within the Bioregion. Outside of the Geraldton Sandplains the species bears a strong similarity in its foliar morphology to *L. cinereus* from the Avon Wheatbelt. It can be separated from that species by the following couplet:

L. nitidus. Leaves shiny, with short, stiff marginal hairs; sepals acute or subacute; style base broad, tapering evenly from ovary apex; drupe with subterminal rim, and the apical surface flat or ascending between the rim and the style base, hairs restricted to lower surfaces, long-appressed.

L. cinereus. Leaves matt, usually more or less glaucous, usually with long spreading hairs on the margins or throughout; sepals obtuse; style base narrow and abruptly differentiated from ovary apex; drupe apex truncate with the surface descending steeply to the style base, hairs very short, patent and restricted to apex.

Is this species conventionally accepted? If no, explain why. For example, is there any controversy about the taxonomy? For undescribed species, detail the location of voucher specimens (these should be numbered and held in a recognised institution and be available for reference purposes).

No ☐ Yes ☒

Describe any known hybridisation with other species in the wild, indicating where this occurs and how frequently.

No hybridisation is known.

2.2. Description

Describe the physical appearance, habit, behaviour/dispersion and life history. Include anatomy or habit (e.g. size and/or weight, sex and age variation, social structure) and dispersion (e.g. solitary, clumped or flocks etc), and life history (eg short lived, long lived, geophytic, etc).

Erect, open shrub to c. 50 cm high and wide. Leaves very narrow, more or less linear, c. 3-8 mm long and 0.5-0.8 mm wide with two deep grooves either side of the midvein on the undersurfaces. Flowers typical of the genus, white and bearded internally. Fruit narrow, more or less cylindrical a little over 2 mm long and c. 1 mm wide, with a well-defined apical rim, appressed hairy in the lower half.

In common with most members of the genus it is probably a relatively short-lived shrub - in the order of 10-20 years. Fire tolerance unknown but likely to be killed by fire.

A more comprehensive description is provided in Hislop (2011)

2.3. Distribution

Describe the distribution of the species in Australia and, if possible, provide a map.

Apparently restricted to a small area east of Geraldton in the Midwest of Western Australia.

2.4. Habitat

Describe the non-biological habitat (e.g. aspect, topography, substrate, climate) and biological habitat (e.g. vegetation type, associated species, sympatric species). If the species occurs in various habitats (e.g. for different activities such as breeding, feeding, roosting, dispersing, basking etc) then describe each habitat. Note if the habitat has a special defining characteristic. If possible estimate the area of habitat, or the relative abundance of the habitat, and note if a critical habitat requirement (eg breeding habitat) is restricted in its availability to the species.

Non-biological habitat

Grows on a plateau at top of a breakaway in shallow gravelly sand over laterite.

Biological habitat

Associated vegetation is shrubland dominated by *Allocasuarina campestris*, *Banksia fraseri* var.

ashbyi and *Hakea lissocarpha*.

Does the (fauna) species use refuge habitat e.g. in times of fire, drought or flood? Describe this habitat.

N/A

Is the species part of, or does it rely on, a listed threatened ecological community? Is it associated with any other listed threatened species?

No.

2.5. Reproduction

Provide an overview of the breeding system.

For fauna: Provide an overview of the breeding system and breeding success, including: when does it breed; what conditions are needed for breeding; are there any breeding behaviours that may make it vulnerable to a threatening process?

For flora: When does the species flower and set fruit? Is the seed produced viable? What conditions are needed for this? What is the pollinating mechanism? If the species is capable of vegetative reproduction, a description of how this occurs, the conditions needed and when. Does the species require a disturbance regime (e.g. fire, ground disturbance) in order to reproduce?

The species has only been collected in July but the collections all have buds, flowers and mature fruit present. It therefore seems likely that it has a prolonged flowering period, largely determined by soil moisture levels.

Regeneration through seedlings post fire is usually good in the genus but at best sporadic in the absence of fire. This is very likely to be the case with this species although no observations have been made. Good quality fruit is present on the available specimens

Seeds of most *Leucopogon* have the capacity to remain viable in the soil for many years between fire or disturbance events. In this case they are likely to be dispersed by ants.

In regard to pollination, species of *Leucopogon* are generalists and it is probable that many insects act as potential pollinators.

2.6. Population dynamics

Provide details on ages of sexual maturity, extent of breeding success, life expectancy and natural mortality. Describe population structure (presence of juveniles/seedlings, mature and senescing individuals). Estimate generation length.

Individuals in the single known population appear to be mature. Some individuals may be older than others.

Questions 2.7 and 2.8 apply to fauna nominations only

2.7. Feeding

Summarise food items or sources and timing/availability.

N/A

Briefly describe feeding behaviours, including those that may make the species vulnerable to threatening processes.

N/A

2.8. Movements

Describe any relevant daily or seasonal pattern of movement for the species, including relevant arrival/departure dates if migratory. Provide details of home range/territories.

N/A

SECTION 3. INTERNATIONAL CONTEXT

For species that are distributed both in Australia and in other countries.

3.1. Distribution

Describe the global distribution.

N/A

Provide an overview of the global population size, trends, threats and security of the species

outside of Australia.

N/A

Explain the relationship between the Australian population and the global population. What percentage of the global population occurs in Australia? Is the Australian population distinct, geographically separate or does part, or all, of the population move in/out of Australia's jurisdiction? Do global threats affect the Australian population?

N/A

SECTION 4. CONSERVATION STATUS AND MANAGEMENT

Conservation status and management information is required for the national extent of the species, however, greater detail is expected for the WA occurrences. If the taxon is considered to be endemic to Western Australia, please provide supporting evidence.

4.1. Population

What is the total national/State population size in terms of number of mature individuals? Has the number of individuals been counted, or is this an estimate? Provide details of the method of determining the number of individuals. Are there other useful measures of population size and what are they? Or if these are unavailable, provide an estimate of abundance (e.g. scarce, locally abundant etc).

Note: The term 'population' is used in a specific sense in the Red List Criteria that is different to its common biological usage. Population is here defined as the total number of mature individuals of the taxon. In the case of taxa obligately dependent on other taxa for all or part of their life cycles, biologically appropriate values for the host taxon should be used. (IUCN 2001)

The total population size of *Leucopogon nitidus* is 84 individuals. The number of individuals at the single known location has been counted and a GPS coordinate recorded for each individual or cluster of individuals. There are only a small number of plants so counting each individual was considered the most appropriate method of determining population size.

Leucopogon nitidus is endemic to Western Australia.

How many subpopulations or locations do you consider the species occurs in and why?

Note: 'Subpopulations' are defined as geographically or otherwise distinct groups in the population between which there is little demographic or genetic exchange (typically one successful migrant individual or gamete per year or less). 'Locations' are defined as a geographically or ecologically distinct area in which a single threatening event can rapidly affect all individuals of the taxon present. The size of the location depends on the area covered by the threatening event and may include part of one or many subpopulations. Where a taxon is affected by more than one threatening event, location should be defined by considering the most serious plausible threat. (IUCN 2001) Refer to Red List Guidelines 9.0

Leucopogon nitidus is known from a single location where 84 plants are recorded in close proximity to each other and is considered a single subpopulation and single location under IUCN.

Provide locations of: captive/propagated occurrences or *ex situ* collections; recent re-introductions or introductions to the wild; and sites for proposed re-introductions or introductions. Have these sites been identified in recovery plans?

There are currently no known propagated occurrences of *Leucopogon nitidus*.

No seed has been collected for storage at the Department of Parks and Wildlife Threatened Flora Seed Centre.

There are currently no proposed re-introduction sites.

For flora, and where applicable, for fauna, detail the location, land tenure, estimated number of individuals, area of occupancy, and condition of site for each known date, location or occurrence. More specific detail is expected for WA occurrences for taxa that are not endemic to WA.

Date of survey	Location Description (include coordinates of the site)	Land status	Number of mature individuals at location	Area of occupancy at location	Condition of site
22/7/13	Mt Julia, remnant of vegetation on Property called "Sandsprings"	Private Property	84	2ha	very good

What is the total area of occupancy (in km^2) for the species; explain how it was calculated and datasets used. If an accurate estimate is unavailable, provide a range of values or a minimum or maximum area estimate. Where separate breeding habitat is applicable, if possible, also provide area of breeding habitat.

The actual area of occupancy is approximately 0.02 square km. This was calculated by determining the approximate area within which the plants occur (length x width). Using the 2kmx2km IUCN method, the AOO is 4km^2.

What is the extent of occurrence (in km^2) for the species; explain how it was calculated and datasets used. If an accurate estimate is unavailable, provide a range of values or a minimum or maximum area estimate.

The extent of occurrence is 4 square km. There is only one location for this species so the extent of occurrence is the AOO within which the plants at this location are known to occur.

Identify important occurrences necessary for the long-term survival and recovery of the species? This may include: key breeding populations, those near the edge of the range of the species or those needed to maintain genetic diversity.

Due to the small number of individuals and small area of occupancy it is considered that all occurrences are important for the long-term survival and recovery of the species.

Is the distribution of the species severely fragmented? Why?

The current known distribution of *Leucopogon nitidus* is not considered to be fragmented as the 84 individuals occur together in a single vegetation remnant. If other locations were found the distribution is likely to be fragmented due to the highly cleared landscape of the northern Wheatbelt in which the species occurs.

Is the taxon subject to extreme fluctuations? If so, provide evidence.

The species is not known to have had fluctuation in number as the population has only been fully surveyed on one occasion.

Has there been any known decline in the species within WA or nationally, or is this likely in the future? – provide details in relation to the elements detailed below, including how the decline has been measured or inferred. Is there a presumption of continuing decline? If so, provide details of the decline and how it relates to the specific Red List Categories and Criteria version 3.1.

Note: A continuing decline is a recent, current or projected future decline (which may be smooth, irregular or sporadic) which is liable to continue unless remedial measures are taken. Fluctuations will not normally count as continuing declines, but an observed decline should not be considered as a fluctuation unless there is evidence for this. (IUCN 2001) Refer to Red List Guidelines 9.0

There is no information on population change over time for this species. The population has only been fully surveyed on one occasion.
It is expected that there has been an historic decline in the species due to its location within an area which has a long history of livestock grazing and agriculture and one of the first settled and farmed areas of the Midwest. The property on which it occurs has been grazed since the mid 1800's.

Has there been a decline in the size of the population (number of mature individuals)?

The total number of known plants was determined to be 84 during a 2013 survey. The population had not been fully surveyed prior to this survey. It is expected there has been an historical decrease due to clearing for agriculture and grazing in the local area. Prior to the area being fenced the population would have been grazed by sheep.

- **can the rate of population size reduction be determined over the last 10 years or 3 generations (whichever is the longer)? If so, state whether the determination is based on quantitative data (observed), estimated (provide data and calculations), inferred or suspected.**

There is no information on population history.

- **can the rate of population size reduction be estimated for the next 10 years or 3 generations and in any 10 year or 3 generation period (up to a maximum of 100 years into the future)? If so, state how the reduction is estimated (provide data and calculations), inferred or suspected.**

There is no information on population history.

Has there been a decline in the number of locations, extent of occurrence or area of occupancy?

It is expected that there has been an historic decline in the species due to its location within an area which has a long history of livestock grazing and other agriculture. The area of vegetation within which the known population occurs is likely to have been grazed by sheep and/or cattle prior to fencing in the late 1900's and may have been previously more extensive within this remnant.

Has there been a decline in the area or quality of habitat?

The vegetation within which the known population occurs is currently in very good condition and the main disturbances include clearing of tracks/firebreaks, rabbits and weeds. The condition of this vegetation does not appear to have declined since the species was discovered in 2001.

4.2. Survey effort

Describe the methods to conduct surveys. For example, season, time of day, weather conditions; length, intensity and pattern of search effort (including where species not encountered); any limitations and expert requirements.

Jenna Brooker first collected this *Leucopogon* during a survey of the vegetation remnant which was for the purpose of gaining funds to fence the area and have a covenant put in place. This survey was carried out during one day in June and July 2001 and involved walking throughout the remnant, recording the plants present, vegetation condition and collection of specimens of unfamiliar plants for later identification.

When the specimen of this plant collected during the Jenna Brooker survey was found to be a new taxon, the Geraldton Regional Herbarium group returned to the remnant to relocate the plant and collect more specimens. This included a one day survey across the southern part of the bushland by five people in July 2008.

In August 2008 Anne Gunness undertook several days (>5 days) of specific searches looking for new locations in suitable habitat within nearby private property and reserves. This involved traversing areas of appropriate habitat on foot. Maps which highlight the areas included in this survey are attached to this nomination.

Mike Hislop has been aware of this plant and its rarity for around ten years and has undertaken several field trips within the district, during which he did not observe this species at any location surveyed.

In July 2013 the Geraldton Regional Herbarium Group returned to the original collection site, with the nominator Alanna Chant, to survey the extent of the species and the population was mapped - a GPS location was recorded for each individual or cluster of individuals.

A Nature Reserve to the south of Mt Julia on Sandsprings road was inspected by Alanna Chant for a day during spring 2013 and the habitat was found to be unsuitable for *Leucopogon nitidus*.

The nearby Wicherina Reserve has been surveyed on many occasions by both Alanna Chant and the Herbarium Group. Most of the area is sandplain and unsuitable habitat for this species. No locations of this plant have been found in Wicherina Reserve.

Provide details on the distinctiveness and detectability of the species, or the distinctiveness of its habitat, that would assist survey success.

Leucopogon nitidus is reasonably distinctive and is not easily confused with another similar species in the local area. Some images of this species are included as an attachment.

Has the species been reasonably well surveyed? Provide an overview of surveys to date (include surveys of known occurrences and surveys for additional occurrences) and the likelihood of its current known distribution and/or population size being its actual distribution and/or population size. Include comments on potential habitat and surveys that were conducted, but where the species was not present/found.

Leucopogon nitidus is considered to be reasonably well surveyed.

Jenna Brooker first collected this *Leucopogon* during a remnant vegetation survey in June and July 2001, which covered the remnant in which the known population occurs. The Geraldton Regional Herbarium group returned to the remnant in 2008 to relocate the plant and surveyed the southern portion of this remnant. In 2013 they returned and fully surveyed the entire population. Jenna Brooker and the Geraldton Regional Herbarium Group have been surveying and collecting plant specimens within 50km of Geraldton for over 13 years and have not found this plant at any other location.

In August 2008 Anne Gunness undertook several days of specific searches looking for new locations on suitable habitat within nearby private property and reserves.

Mike Hislop has carried out surveys in the local area on several occasions since he became aware of this plant and has not found any new locations during his field trips.

Alanna Chant has worked as a Flora Conservation Officer for the Geraldton District for over 10 years and has been familiar with this plant since collecting with the GRHG in 2008. Since then various surveys in nearby reserves (Sandsprings Rd, Wicherina) private properties and road/rail reserve and have not located this plant at any new locations.

It is possible there are some small areas of unsurveyed vegetation on nearby private property which may be suitable habitat for *Leucopogon nitidus*. However this species is likely to be preferentially grazed so unless these areas are protected from stock it is unlikely that they have persisted.

If there are areas of suitable habitat on nearby private property that have been protected from grazing over a long period it may be possible that other populations have survived. However due to the highly cleared landscape in which the species occurs, it is unlikely that any new occurrences would be extensive. A further consideration in respect to the possibility of surveying remnant vegetation on private property, is the common reluctance of landowners to allow access because of the belief that any successful search could have the effect of constraining their farming operations.

Recovery actions will need to include dedication of time toward property owner liaison. Translocation to establish new populations would also be a high priority as a single event (eg fire) could easily destroy the entire known population, without at this stage any sure knowledge of its response to fire.

4.3. Threats

Identify past, current and future threats indicating whether they are actual or potential. For each threat describe:

a). how and where they impact this species
b). what the effect of the threat(s) has been so far (indicate whether it is known or suspected
c). present supporting information/research
d). does it only affect certain populations?
e). what is its expected effect in the future (is there supporting research/information; is the threat only suspected; does it only affect certain populations?).

Leucopogon nitidus is expected to have been impacted by a long history of land clearing and agriculture in the Kojarena area.

There is currently a single known population on a private property within a remnant of vegetation which is fenced and thought to be under a National Trust covenant. The vegetation is in very good condition, however past threats include grazing and current threats include weeds and rabbits.

Leucopogon nitidus is also likely to be killed by fire and a single fire event could destroy the entire population. Although it seems likely that there would be significant recruitment following fire (to judge by the fire response of other members of the genus), should the resultant seedlings appear during a low rainfall year they may not survive.

Climate change is a potential future threat to this species.

Small population size is likely to indicate there is a low genetic diversity within the population. This could be limiting to the long term population viability.

There is little known about this species due to its recent discovery and single location. Regular monitoring will be necessary to gain more information on population change over time and the impact of various threats.

If possible, provide information threats for each current occurrence/location:

Location	Past threats	Current threats	Potential threats	Management requirements (see section 4.4)
Mt Julia, Kojarena	Land clearing, livestock grazing	Rabbits, kangaroos, weeds	Small population size, climate change, fire	Monitor the population, collect seed, implement translocations, weed and rabbit control

Identify and explain why additional biological characteristics particular to the species are threatening to its survival (e.g. low genetic diversity). Identify and explain any models addressing the survival of the species.

Low genetic diversity is likely to be a future threat to this species as the total known population is 84 plants at one location. It is possible that this population size may be a threat to the long term survival of this species.

Collection of seed from all known plants is a high priority recovery action, as is translocation to establish new populations.

Areas of potential suitable habitat for survey are very limited and inaccessible due to the requirement for private property owner permission for access for survey.

It will be necessary to prioritise actions such as meeting with landholders and discussing this plant's habitat requirements to determine if any further suitable area exist in the hope that new locations may be found to increase the population size and future viability of the species.

4.4. Management

Identify key management documentation for the species e.g. recovery plans, conservation plans, threat abatement plans etc.

Leucopogon nitidus is not currently included in any key management documentation.

Does this species benefit from the management of another species or community? Explain.

The DRF *Leucopogon marginatus* occurs in the same small area of remnant vegetation as the single known location of *Luecopogon nitidus*.

How well is the species represented in conservation reserves or covenanted land? Which of these are actively managed for this species? Provide details.

Leucopogon nitidus does not occur on any conservation reserves. The single location is thought to have a covenant in place with the National Trust.

Are there any management or research recommendations that will assist in the conservation of the species? Provide details.

In order to assist in the conservation of this species it will be necessary to monitor the site frequently and determine the longevity of the species and how long plants continue to flower and produce seed. Trials to gain information on seed germination requirements. It will also be useful to determine how long seed remains viable in the soil.

Management requirements include:

- Maintain liaison with the landowner to ensure appropriate management of the site;
- Protect the site from fire unless required for ecological reasons, and implement early intervention in any wildfires which may threaten the site;
- Protect the existing population from grazing by stock through maintaining the fence;
- Monitor the population for evidence of rabbit, kangaroo or weed impacts, or changes in plant health;
- Control rabbits if evidence of a rabbit population or herbivory noted;
- Control infestations by weeds that might impact the population;
- Erect protective fencing if kangaroo herbivory noted as a significant threat;
- Collect and store seed;
- Establish new populations in more secure locations, if a suitable location can be found;
- Survey any newly identified areas of suitable habitat.

4.5. Other

Is there any additional information that is relevant to consideration of the conservation status of this species?

SECTION 5. NOMINATOR

Nominator(s) name(s)	
Organisation(s)	
Address(s)	
Telephone number(s)	
Email(s)	
Date	27/1/14

If the nomination has been refereed or reviewed by experts, provide their names and contact details.

Michael Hislop

Jenna Brooker

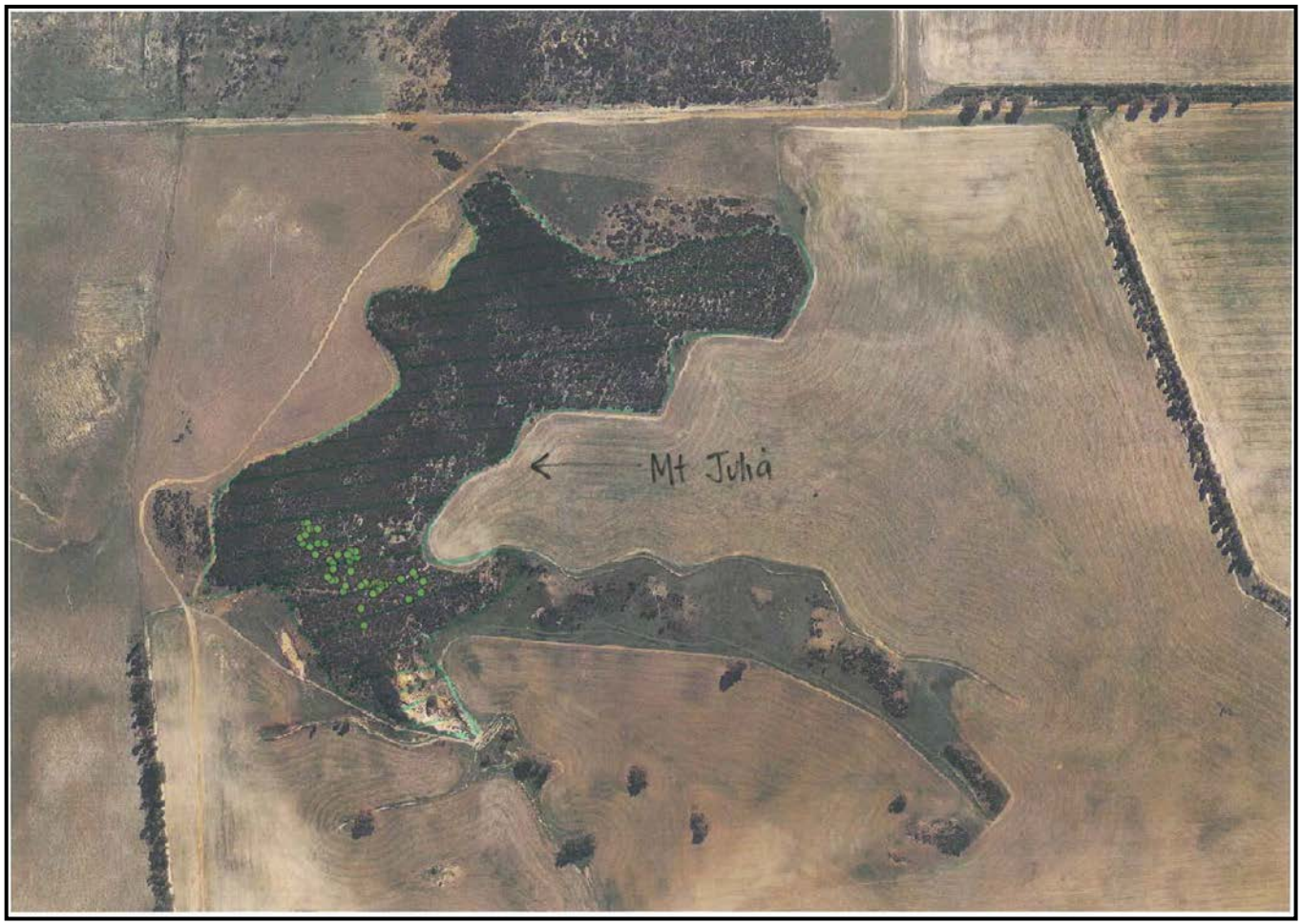
SECTION 6. REFERENCES

What references or sources did you use to prepare your nomination? Include written material, electronic sources and verbal information. Include full references, address of web pages and the names and contact details of authorities with whom you had verbal communications.

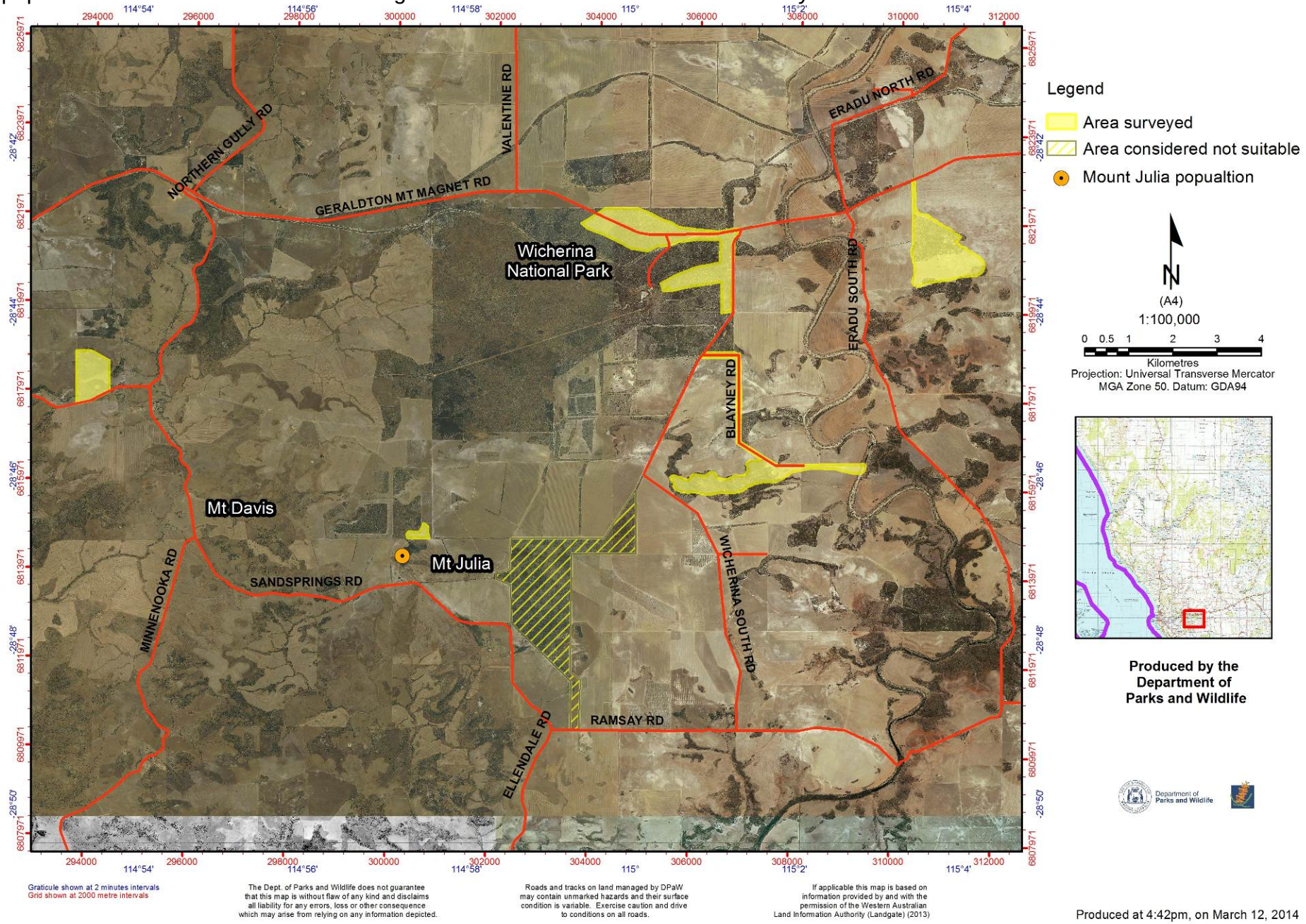
WA Herbarium Florabase

Hislop, M (2011). New, locally endemic taxa in Leucopogon (Ericaceae: Styphelioideae: Styphelieae) from the Perth and midwest regions of Western Australia. Nuytsia 21(2): 75-89

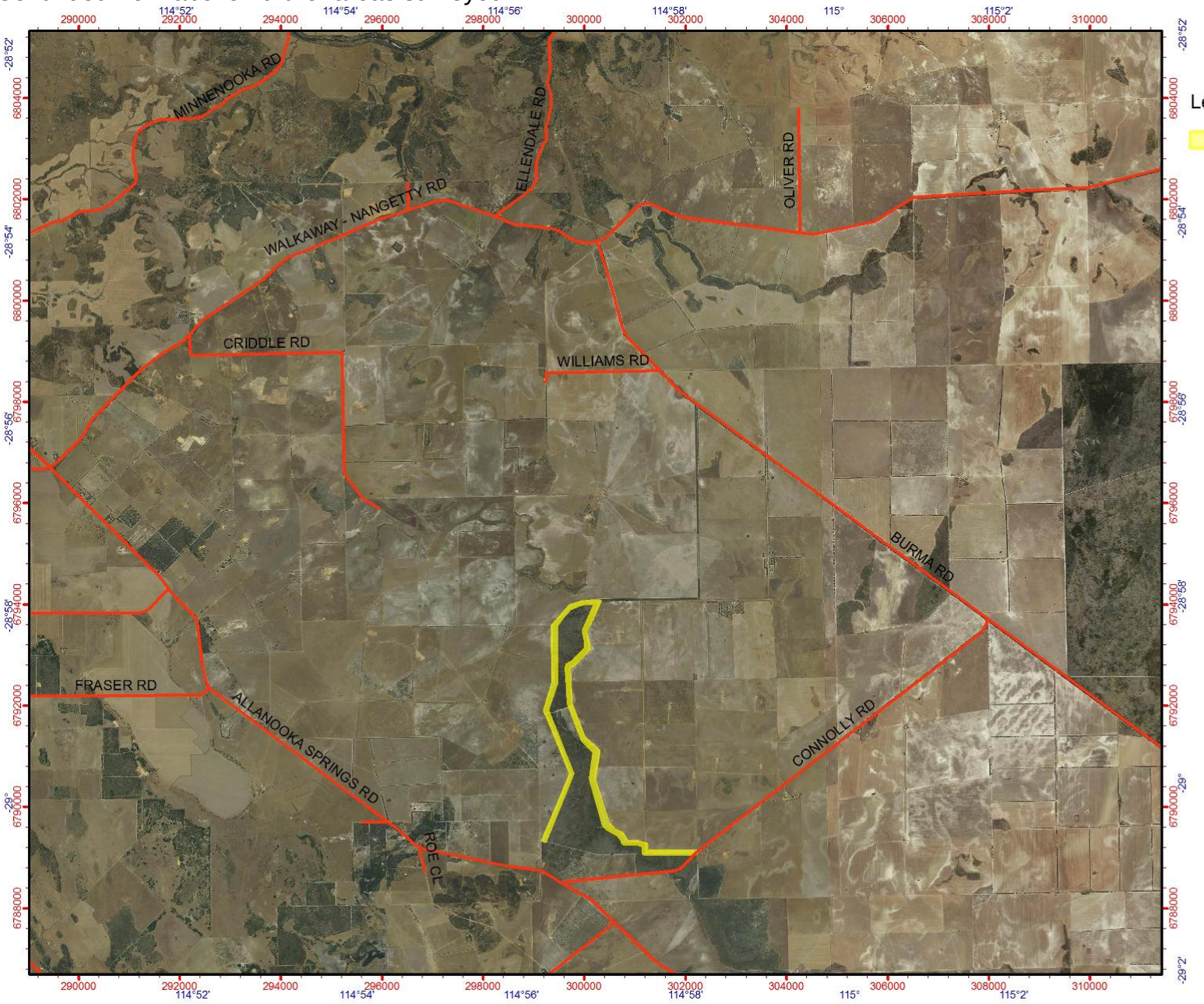
Attachment 1. Current known population of *Leucopogon nitidus* found at Mt Julia, Jenna Brooker 2001.



Attachment 2. Survey effort for *Leucopogon nitidus* conducted August 2008 by Anne Gunness around the location of the known population at Mt Julia. The area in orange was deemed as not suitable habitat by Alanna Chant 2013. Continued over leaf.



Continued from above: further areas surveyed.



Legend

Surveyed area

(A4)

1:100,000

0 0.5 1 2 3 4

Kilometres

Projection: Universal Transverse Mercator
MGA Zone 50. Datum: GDA94

Produced by the Department of Parks and Wildlife

Department of Parks and Wildlife

Graticule shown at 2 minutes intervals
Grid shown at 2000 metre intervals

The Dept. of Parks and Wildlife does not guarantee that this map is without flaw of any kind and disclaims all liability for any errors, loss or other consequence which may arise from relying on any information depicted.

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Produced at 4:42pm, on March 12, 2014